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THIS HANDBOOK WAS DESIGNED FOR USE BY SCHOOL ADMINISTRATORS IN DEVELOPING A TOTAL AUDIOVISUAL (AV) PROGRAM. ATTENTION IS GIVEN TO THE IMPORTANCE OF AUDIOVISUAL MEDIA TO EFFECTIVE INSTRUCTION, ADMINISTRATIVE PERSONNEL REQUIREMENTS FOR AN AV PROGRAM, BUDGETING FOR AV INSTRUCTION, PROPER UTILIZATION OF AV MATERIALS, SELECTION OF AV EQUIPMENT AND INSTRUCTIONAL MATERIALS, INSTRUCTIONAL MATERIALS CENTERS, AND EVALUATION OF AUDIOVISUAL SERVICES. AN ANNOTATED BIBLIOGRAPHY OF OVER 60 REFERENCES IS INCLUDED. (MS)

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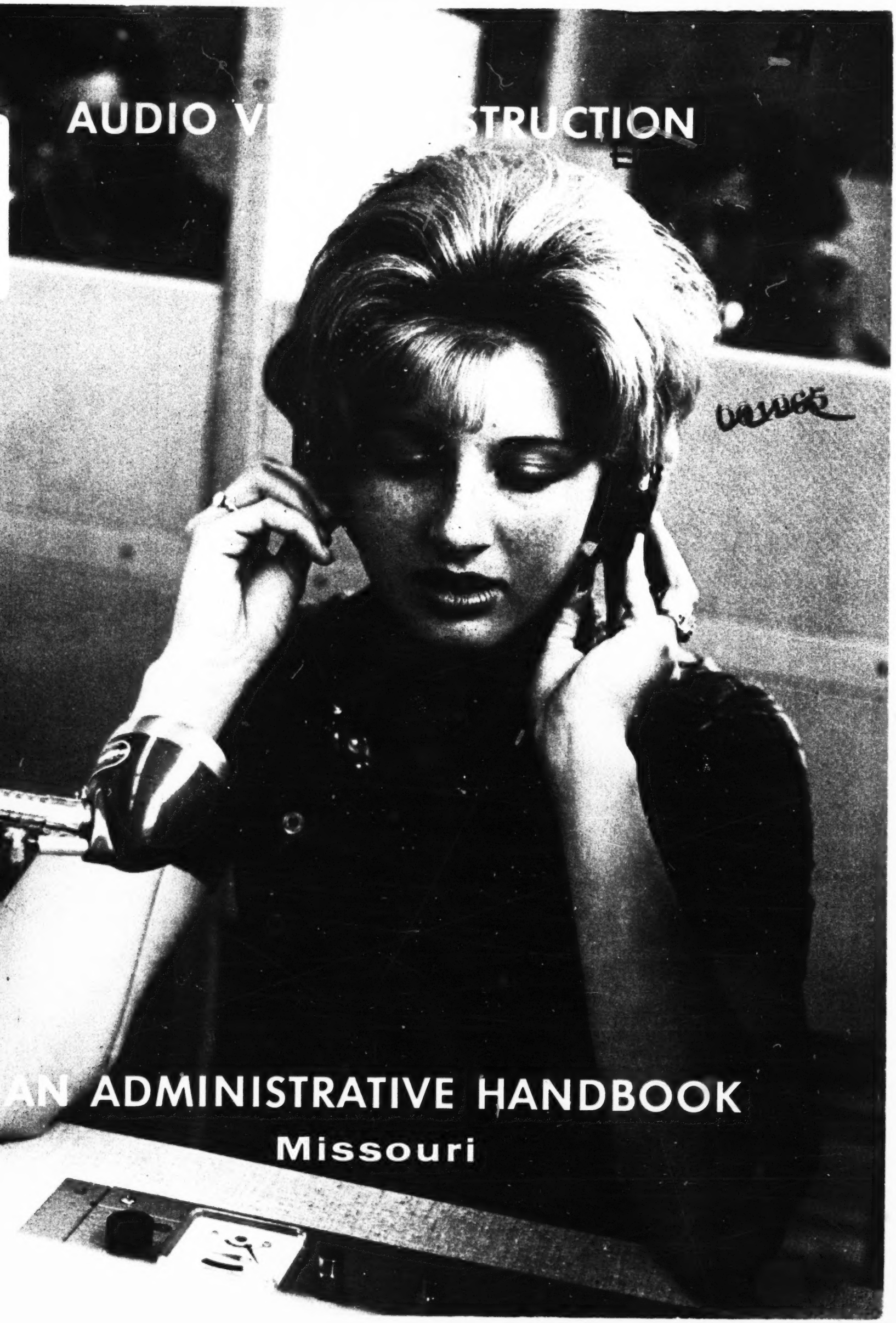

AN ADMINISTRATIVE HANDBOOK

Missouri

EM 006 093

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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AUDIO-VISUAL INSTRUCTION

AN ADMINISTRATIVE HANDBOOK

Publication No. 21-H

1961 Tentative Report

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FOREWORD

Audio-Visual instruction may be interpreted to mean a method of teaching. In the past, audio-visual communication included the use of lecture, textbooks and other such verbal materials. Today the meaning of the term is generally restricted to use of special communicative devices such as film projectors, television, radio, recorders, excursions, laboratories, models and exhibits. It is interesting to note that in this sense the audio-visual movement had its beginning in the St. Louis Educational Museum in 1904.

The constant growth of this movement throughout the nation since 1904 reflects confidence of educators in the effectiveness of audio-visual materials in the teaching-learning processes. Research in this field supports the conclusion that the subject-matter content can be enriched and given concrete meaning through the use of audio-visual aids at all grade levels. Research also supports the assumption that audio-visual materials serve as motivation for learning; and that it is an effective means of modifying interest, attitudes, and concepts.

Although the audio-visual movement had its beginning in Missouri at the turn of the century, the use of these communicative aids has been delayed by many schools in the state because of inadequate funds, while others have not realized the value of such aids as a means for upgrading instruction. Since this handbook has been designed for use by administrators in developing a total audio-visual program, we solicit their support in the revitalizing of this movement in our state. Audio-visual instruction should no longer be considered a "frill" in education.

We express our appreciation to the members of the Study-Production Committee, who have given so freely of their time and knowledge in the preparation of this Handbook. The ultimate effectiveness of their work will be found in the quality of classroom instruction when this program is fully implemented at the local district level.

HUBERT WHEELER
Commissioner of Education

Chapter One

The Importance of The Learning Environment

The primary responsibility of school administrators is the task of supplying the plant, staff, tools and leadership that will provide the best possible environment in which the child can grow and develop .....

The Importance of The Learning Environment

THE PRIMARY RESPONSIBILITY OF SCHOOL ADMINISTRATORS IS THE TASK OF SUPPLYING THE PLANT, STAFF, TOOLS, AND LEADERSHIP THAT WILL PROVIDE THE BEST POSSIBLE ENVIRONMENT IN WHICH THE CHILD CAN GROW AND DEVELOP. In order that this environment may be provided it is necessary that the best instructional materials be within the reach of every classroom teacher and that every teacher be skilled in making effective use of these materials.

It has been pointed out by many leaders in education and elsewhere that audio-visual materials and the techniques for the proper utilization of these materials may well provide the means for achieving the quality and efficiency needed in order that the democracies may maintain their leadership in the advancement of mankind.

Audio-visual technique is not something new in education. Outstanding educators have, since the days of Comenius (1592-1670) urged teachers to provide better means by which pupils could learn by the use of their senses in direct observation. Within recent years a number of factors have accounted for an accelleration in the use of these audio-visual tools and techniques. Some of these factors are:

-a growing recognition of the importance of materials that enhance learning

-the success of the armed forces in the use of these materials in their training program

-recognition of the effectiveness of these techniques in teaching in business and industry

-the easy access to, increasing variety, and improved quality of these materials

-recognition of the fact that teachers have more to teach and must teach it more effectively and efficiently than ever before

It should be pointed out that the members of the United States Congress in enacting the National Defense Education Act of 1958 recognized the importance of modern instructional materials and initiated in a positive action program the concept that the security of the nation requires the fullest development of the mental resources and technical skills of young men and women. This act provides for funds that will enable local school units to acquire audio-visual equipment and materials for the purpose of improving and strengthening the instructional programs in the areas of science, mathematics, and modern foreign languages. The Act also provides funds for the development of systematic audio-visual education programs, the training of teachers in the effective use of audio-visual materials and the dissemination of information about modern educational media.

The faith of the Congress and the advisors who provided leadership in promoting the National Defense Education Act of 1958 was not without justification in research. The committee of the National Society for the Study of Education which reviewed the accumulated research in audio-visual education in 1949 reported that research supports the following claims for properly used materials:

-They supply a concrete basis for conceptual thinking and hence reduce meaningless word responses of students.

-They provide a high degree of interest for students.

-They supply the necessary basis for developmental learning and hence make learning more permanent.

-They offer a reality of experience which stimulates self-activity on the part of pupils.

-They develop a continuity of thought; this is especially true of motion pictures.

-They contribute to growth of meaning and hence to vocabulary development.

-They provide experiences not easily secured by other materials and contribute to the efficiency, depth, and variety of learning.

THE IMPORTANCE OF THE LEARNING ENVIRONMENT

It has been a frequent misconception that audio-visual instructional materials are basically devices for slow or low level learners. Research shows otherwise. Bright, average, and dull profit from instructional materials, though in varying degrees. The amount learned is usually directly related to the intelligence of the learner. Therefore, all pupils are the concern of those who understand the proper utilization of audio-visual materials and techniques.

This handbook explains the proper relationship of the audio-visual instructional program and the curriculum. It should suffice here to point out that the utilization of these audio-visual instructional materials is not something to be considered separate from the instructional program, but rather an integral part of all the teaching and learning environment.

It is the purpose of this book then to help administrators and teachers to understand the important part that is played by the proper understanding and effective use of audio-visual materials and techniques. By describing the program, assessing possibilities for improving facilities, and showing the various facets that make for a good audio-visual program, the committee presents this handbook in the hope that it will help to promote proper facilities and encourage the efficient use of all materials that can make learning more effective.

THE CURRICULUM AND AUDIO-VISUAL MATERIALS

AUDIO-VISUAL MATERIALS ARE AN INTEGRAL PART OF THE GREAT ARRAY OF INSTRUCTIONAL MATERIALS AVAILABLE FOR USE IN THE CLASSROOM TODAY. These materials range all the way from the concrete setting of real life experiences to what may tend to be pure symbolism of characters which are combined to form words, sentences, and ideas. Without the ability to translate these symbols into words and sentences and then into ideas and meaningful concepts no learning can be achieved from the identification or sounding of such abstractions.

Multisensory materials that can be seen, heard, or manipulated serve to bridge the gap between an abstraction and a clear concept or real life experience. Hence, many things can be taught by the use of audio-visual media that cannot be taught effectively without them. For example, it would be difficult to teach meaningfully the shape, size, or topography of a geographical area without the use of a map, globe, picture, or some other instructional material.

It also would be difficult to portray the real changes in plant growth or the metamorphoses of insects without the use of time-lapse photography. The concepts of blood circulation, or the movement of microscopic life, become real experiences for the learner when studied with the assistance of the microscope, microprojector, slides or other audio-visual materials. Virtually the whole world may be brought into the classroom with modern teaching materials.

The use of audio-visual materials is not limited to any area of the curriculum, but considerable judgment must be exercised in the selection or preparation of these materials for the respective units and areas of study. The use of specific materials must be consistent with the character and objectives of a particular unit and the varying needs of individual learners in the group. It is an accepted fact that the pupil learns those things which make sense to the learner only when they are associated meaningfully with what the individual already knows. Audio-visual materials facilitate such association.

Good teaching implies that every means at hand, or that can be devised will be used to help the student to learn more and to learn better those things he needs to know. Audio-visual materials carefully selected, and used at the proper time, facilitate the development of understandings that help pupils to move toward that goal. **RATHER THAN TO THINK OF THESE MATERIALS AS ANOTHER PROGRAM, OR EVEN AS ADDITION TO THE PRESENT ONE, THEY SHOULD BE CONSIDERED INDISPENSABLE MEDIA FOR MOST EFFECTIVE INSTRUCTION.**

The maturity of the learner must be a major factor in the selection of all instructional materials to be used, but maturity must be interpreted to mean something more than chronological age or grade level. A more accurate connotation of maturity relates to the state of readiness of the learner for a particular learning experience. For example, one sixth grade pupil may really understand a geometrical proof, whereas another pupil four years older in the tenth grade may have difficulty in doing so. Hence, multisensory materials will need to be used for different purposes in these two cases.

All curriculum planning should take into account the scope and sequence of learning experiences necessary for educational progress. A careful attempt should be made to ascertain the specific types of instructional materials that will help to make these learning experiences most effective. A curriculum planning committee with this responsibility will not make maximum contribution simply by planning to make use of audio-visual materials already on hand. There can be no better time for planning proper expansion of the audio-visual inventory than to relate

it to the work of specific planning by a curriculum committee. It should be considered just as much a failure for the committee to omit this phase of its responsibility as it might be to overlook the significance of textbooks or other supplementary materials. Such a committee is in position to give serious consideration to all types of instructional materials needed by teachers and pupils for most effective development of the curriculum.

A proper understanding of the importance of all resources for teaching and learning implies that there will be provided the specific types of instructional materials that can be used best for effective teaching at a particular time, for a certain type of learner, and on a specific level. Obviously, such planning necessitates a high degree of skill in the differentiation of instructional materials. The question, then, is not whether audio-visual materials will be used, but what kind and to what extent they will be used.

Chapter Two

Planning for Audio-Visual Instruction

The philosophy of a school system reflects the administration which attempts to implement it . . . . .

Audio Visual

9.00-9.30											
9.30-10.00											
10.00-10.30											
10.30-11.00											
11.00-11.30											
11.30-12.00											
12.00-12.30											
12.30-1.00											
1.00-1.30											
1.30-2											

Planning for Audio-Visual Instruction

THE PHILOSOPHY OF A SCHOOL SYSTEM REFLECTS THE ADMINISTRATION WHICH ATTEMPTS TO IMPLEMENT IT. The superintendent, working with his board of education representing the patrons of the district, necessarily must consider all of the problems involved in meeting current and future needs of education, and then, try to determine feasible policies to follow in solving them. This means that his leadership will be a key factor in bringing about a favorable climate for learning. He must become aware of basic needs, those fundamental to realistic planning for administration and supervision of instruction. He must extend the degree to which audio-visual instruction techniques are utilized. He must provide adequate facilities, personnel and materials and sufficient financial support.

With a favorable acceptance of the importance of a strong audio-visual component in education, a plan for developing it into the normal operation of the school is necessary. The following are essential starting points:

THE ADMINISTRATIVE STAFF

Each school system should have a capable, well-qualified person to organize and administer the audio-visual program. This person should provide the necessary leadership for bringing about a harmonious blending of all the various curriculum elements which are essential to an effective audio-visual program. Contacts with the different leaders of the school system and provision for first-class service to the staff are important to the upgrading of instructional procedures and require someone to develop these features to the maximum. The holder of this position is usually known as the director of audio-visual education or the audio-visual supervisor. Since the cost of additional administrative or supervisory personnel is a big problem in many school systems, consideration of special factors which are pertinent to each school is necessary. District audio-visual directors should be thoroughly qualified individuals with the same status, degree of responsibility and authority as district-wide directors of other educational services.

CRITERIA FOR SELECTING AN AUDIO-VISUAL DIRECTOR

- In school systems with fifty or more teachers, a full-time professional audio-visual director is recommended, along with an adequate staff to handle the development of effective instruction throughout the entire school system. Provision for use of clerks, technicians, deliverymen and other personnel already in the system should be made.
- In school systems with 25-50 teachers a director with at least half-time responsibilities, is recommended.
- In those school systems with less than 25 teachers, an audio-visual director with a reduced teaching load is recommended.

QUALIFICATIONS

It is important to select a candidate with professional training and experience for a position involving audio-visual responsibilities as discussed in Chapter III. Also of importance are interest and enthusiasm, as well as the ability to work cooperatively with others. (It is interesting to note here that the field of audio-visual education today has evolved from a missionary zeal on the part of many teachers in years gone by.)

AUDIO-VISUAL DIRECTOR DUTIES

Key to the program's success is the director, who is responsible to the administrative person in charge of instruction. The director:

- administers the department of audio-visual instructional materials

PLANNING FOR AUDIO-VISUAL INSTRUCTION

- develops an operative program geared to improving learning
- supervises the audio-visual staff
- serves as a consultant to the staff
- arranges for procurement of materials and equipment
- supervises distribution of materials
- maintains inventory, circulation and utilization records
- arranges for storage and inventory of supplies and equipment
- develops a maintenance and repair system
- investigates community resources
- conducts audio-visual demonstrations
- plans displays
- publicizes and interprets audio-visual concepts to teachers and public
- develops in-service training activities (workshop and study groups)
- sets up production facilities for teacher and staff use
- arranges review sessions with teachers and staff to evaluate materials
- analyzes new materials for their contribution to the curriculum
- organizes student audio-visual service clubs
- prepares a budget for audio-visual needs of the school
- evaluates the overall program in terms of quality, quantity and services
- sets up measures to improve the utilization of the materials and equipment owned by the school
- supervises educational radio and television broadcasting

AUDIO-VISUAL COORDINATOR

Assisting the director in any system should be building coordinators. Each school building should have an audio-visual coordinator with reduced teaching load. The amount of release-time should depend upon the size of the teaching staff and amount of responsibility delegated to the coordinator. This might range from one hour per day in small schools to full-time for very large schools. In cases where release-time is impractical, coordinators who spend after-school-time should receive compensation for extra work-loads.

Duties of this coordinator which are of major importance, are to:

- serve on curriculum committees
- supervise materials and equipment within the building
- serve as a liaison between the teacher and district service center and/or the director
- help teachers in the use of materials and operation of equipment
- train teachers in the use of materials and operation of equipment
- coordinate requests for materials in cooperation with teachers
- help develop a student audio-visual service club program

AUDIO-VISUAL ADMINISTRATIVE FUNCTIONS

A BASIC STEP IN PLANNING FOR AUDIO-VISUAL INSTRUCTION IS TO FIND OUT WHAT MATERIALS AND EQUIPMENT ARE AVAILABLE IN A SCHOOL SYSTEM, THE EXTENT OF USE, AND HOW TO ACHIEVE MAXIMUM EFFECTIVENESS. What materials and equipment are available? Where are they located? How are they distributed, and what are the building facilities that would contribute to the use of audio-visual materials?

THE MATERIALS AND EQUIPMENT THROUGHOUT THE ENTIRE SYSTEM SHOULD BE INVENTORIED. Type, location, subject correlation, grade levels, dates of publication or production of materials and model, serial number, and condition of equipment should be noted. Records should be kept up-to-date, and staff members provided with annotated and descriptive listings of all materials and equipment.

A SYSTEMATIC BUT CONVENIENT METHOD OF SCHEDULING REQUESTS FOR MATERIALS BY TEACHERS SHOULD BE ESTABLISHED. Materials need to be located where they are easily accessible to teachers who wish to use them. Audio-visual materials not available in the classroom should be located where teachers wishing to use them can obtain them on request. Perhaps one approach to solving several practical problems concerning the use and circulation of materials and equipment would be the selection of a representative committee to look into the major problems, and then more detailed action can be worked out with teachers and administrators.

FINANCIAL SUPPORT

In financing an audio-visual program, the primary thing to keep in mind is the objective of education - **THAT OF PROVIDING YOUTH WITH THE BEST EDUCATIONAL OPPORTUNITIES THAT A SCHOOL SYSTEM CAN AFFORD.**

Among items to consider are: current status of audio-visual instruction in the school, future needs, available financial support and probable future support. Involved in these things are: anticipated use of material and equipment, number of pupils and teachers, whether the school is maintaining a minimum, desirable, or optimum audio-visual offering or is starting a new development, and the extent of services it expects to provide for its teachers.

There is a relationship between the effectiveness of an audio-visual program and the financial support it receives.

Studies indicate considerable variation in existing practices, but an examination of records of past years shows a clear tendency toward **Increased Expenditures.** Larger school systems usually allocate more money for audio-visual instruction than the smaller ones, but frequently spend less per pupil. Larger school systems purchase more of the materials used while smaller systems rent more. But large or small, school systems which are spending less than 2% of their instructional budget for an audio-visual program should question seriously the adequacy of their financial support.

Whatever the support basis, however, it needs to be fully recognized that funds for audio-visual materials and equipment are essential to the school's basic function. In reality, the techniques used in teaching are vital parts of the process of realizing the objectives for which schools were established. Therefore, the administration has an obligation to provide the greatest possible support for each aspect of the instructional program so that adequate supplies, appropriate services and qualified personnel are available.

In order to be able to do this, advice and counsel of the school audio-visual director, the principals, curriculum directors and supervisors, as well as the teachers, are needed to help in the formulation of sound recommendations for the school budget.

The following chapters of this handbook outline the variety of problems facing a school system. To accomplish its goals successfully, all the desirable skills that can be mustered should be put into action. An outstanding operation is possible through a realistic promotion of an effective audio-visual service. Once the values of the use of such techniques are seen clearly, a greater measure of success is almost certain to follow.

BUDGETING FOR AUDIO-VISUAL INSTRUCTION

AUDIO-VISUAL MATERIALS, EQUIPMENT AND PERSONNEL ARE EDUCATIONALLY USEFUL ONLY WHEN APPLIED TO THE SUBJECT MATERIAL TO BE TAUGHT. In an earlier chapter it was pointed out that "audio-visual programs" do not exist in isolation. However, the audio-visual aspects can be isolated for the purpose of examination . . . . . as is done in this handbook.

Similarly, the "audio-visual budget" does not exist in isolation . . . . . but can be extracted from a school budget for examination. Although equipment and materials purchased are most easily identified, the following items may be found in any district's budget and are considered as audio-visual budget items. (These accounting classifications can be found in Missouri's uniform financial accounting system book):

-**Salaries of Supervisors** (if largely or exclusively detailed to supervision of audio-visual aspect of the instructional program)

-**Expenses of Supervision** (including travel expenses, convention expenses, telephone, and printing expenses if due to audio-visual)

-**Instructional Supplies** (if consumed in the process of making audio-visual materials in local audio-visual centers or classrooms)

-**Professional School Library** (if supplementary, non-text, books are purchased for the in-service-training of teaching or student personnel)

-**Upkeep of Instructional Apparatus** (for repair and replacing parts on audio-visual equipment of all sorts)

-**Alterations and Additions to Buildings** (for such things as installing conduit for television or inter-com; building additional rooms for audio-visual centers or equipment storage)

-**Service Systems for New Buildings** (light control and ventilation systems; permanently mounted screens; conduit and wiring for inter-com and television)

-**Instructional Apparatus - New Buildings** (non-consumable audio-visual equipment; photographic darkroom equipment and the like)

-**Instructional Apparatus - Old Buildings** (non-consumable audio-visual equipment; language laboratories and the like)

-**Office Furniture** (filmstrip, tape and record cabinets, work tables in the audio-visual center and/or audio-visual supervisor's office)

Audio-visual materials (considered instructional supplies in Missouri) are properly charged to textbook funds or incidental funds. Building changes and equipment are charged to capital outlay of the building fund. Salaries of certificated personnel are charged to the teacher's fund.

The following list includes items which should be included in school budgets. Some of the items are inapplicable to certain districts:

- Motion pictures, filmstrips, recordings, tape, slides, and other material purchases
- Maps, globes, charts and other graphics purchases
- Projectors, recorders and other equipment purchases

- Projection screens, light control and other related equipment purchases
- Language laboratories, reading rate machines, teaching machines, and other training device purchases
- Building remodeling, rewiring and other maintenance costs for audio-visual
- Repair and replacement of the first five items listed above
- Rentals for materials or fees for membership in materials-cooperatives
- Printing and office supplies for audio-visual services
- Supplies and equipment for local production of audio-visual materials
- Postage and transportation fees for audio-visual service
- Memberships and travel expenses for professional audio-visual meetings
- Periodicals and books for audio-visual professional library
- Salaries for audio-visual personnel
- Equipment and supplies for the local maintenance of audio-visual materials and equipment
- Storage facilities and equipment tables
- Educational field trips
- Educational television and radio

Financing the instructional programs of schools is primarily the responsibility of the local school board and is accomplished largely through local taxes. However, it may be useful to list some of the alternate sources used for partial support of audio-visual programs in many districts:

- Federal funds through programs such as the National Defense Education Act
- Research grants for major experiments from national or local foundations
- Direct state aid
- Cooperative financing by several districts
- School bond funds

PLANNING FOR AUDIO-VISUAL INSTRUCTION

Any expenditure on facilities, equipment, materials or personnel must be justified in terms of its effect on the education of the child. In the case of audio-visual budgetary items this effect can be demonstrated vividly to the public which is asked to finance such expenditures. These are the tools of the teacher. The same tools used to educate the student can be used to educate the general public to the needs of the schools.

Planning provision for each of the items listed, plus others peculiar to a particular school, should make for good coverage of the audio-visual instructional materials and equipment phase of a school's long-range study of its instructional needs. Fill in **your** expenditures for self-examination:

SAMPLE BUDGET FORM

ITEM	PAST YEAR	CURRENT YEAR	NEXT YEAR
Instructional materials and equipment			
rentals			
leases			
purchases			
production			
graphics			
photography			
audio			
Office costs			
supplies			
postage			
Repairs and maintenance			
service contracts			
equipment check-ups			
spare parts			
Replacements for current program			
materials			
equipment			
Additions to current program			
new materials and equipment			
Improvement to building			
room darkening (light control)			
installation of outlets, etc.			
Salaries			
professional			
director			
assistants			
non-professional			
secretary			
technicians			
deliverymen			
clerks			
materials inspectors			
graphics artists			
projectionists			
student help			

Insurance _____

Field trips _____

Travel _____

Professional library _____

Miscellaneous _____

Totals _____ _____ _____

Chapter Three

Training for Audio-Visual Competencies

Regardless of however valuable the contributions of audio-visual instructional materials might be, they are completely dependent on proper utilization . . . . . .

Training for Audio-Visual Competencies

REGARDLESS OF HOWEVER VALUABLE THE CONTRIBUTIONS OF AUDIO-VISUAL INSTRUCTIONAL MATERIALS MIGHT BE, THEY ARE COMPLETELY DEPENDENT ON PROPER UTILIZATION. The indiscriminate use of audio-visual materials could produce a list of educational deterrents equally as long as any list of values. It is very necessary, therefore, that users of these materials have the proper audio-visual training so that values, and not the deterrents, are added to educational experiences.

Standards should be set and audio-visual uses should be evaluated on the basis of these standards:

-the use of audio-visual materials first must meet the criteria of satisfying specific objectives

-audio-visual materials should be used only when they can do a better job of meeting these objectives than would some other teaching procedure

-the materials must give a true picture of the ideas they present

-the materials must be appropriate for the age, intelligence, and experiences of the learners

-the materials must be worth the time, expense, and effort involved

-they must contribute to the development of thinking and critical-mindedness on the part of the students

-they must further the development of democratic attitudes and improvement of human relations

-the physical condition of the materials must be in all respects satisfactory

Techniques of audio-visual utilization that would meet such standards are techniques that need specific training. Within the curriculum of teacher education there should be specific provision for training for these audio-visual competencies. It is in light of this statement that the following recommendations are made for minimum and optimum programs for the training of classroom teachers, audio-visual building coordinators, and district audio-visual directors.

It should be noted that the following recommended courses, and their content areas, are proposed as regular college credit courses. Although descriptive titles are given for the recommended courses, it is the general content areas for these courses that are being recommended and not the specific titles.

CLASSROOM TEACHER . . . . .

. . . . .teacher AV competence

The minimum requirement for teacher certification should be a course in the area of audio-visual utilization:

"Basic Course in Audio-Visual Instructional Materials"

General Description

Considers the use of audio-visual materials in improving instruction. Includes the study of general practices in the areas of selection and utilization of major types of audio-visual materials, ways of using projection and audio equipment, and an examination of the various resources ranging from the field trip and objective materials through the motion picture, still film, radio, television, graphic materials, etc.

Content

-Introduction

-How people learn

-Projected materials in teaching

-Educational recordings

-Community resources

-The chalkboard

-Display materials

-Educational radio and television

-Graphics, flat pictures, maps and globe materials in teaching

-The 16mm motion picture films

-Teaching machines and programmed materials

-Operation of audio visual equipment

A recommended elective that is considered to be highly valuable for the classroom teacher is in the area of teacher-prepared, instructional materials:

"Planning and Preparation of Instructional Materials"

General Description

Develops a basic pattern for the preparation of a wide variety of visual materials. Laboratory practice in techniques of lettering, coloring, and mounting of pictures, maps, charts, posters, for projected and non-projected use.

Content

-Mounting Techniques:

Rubber cement method
Mounting tissues (dry mount press)
Wet mounting on cloth
Dry mounting on cloth (dry mount press)
Glass framing with cloth tape (passe partout)
Laminating (dry mount press)

-Producing Transparency:

Homemade lantern slides
Light-box construction and uses
Lifting
Diazo

-Lettering:

Rubber stamps
Stencils
Stencils with pens
Mechanical
Paste-up

-Photography:

High contrast
Reflex print
Watercoloring by tinting and rubber cement mask

AUDIO-VISUAL BUILDING COORDINATOR

The services of a trained person to coordinate the audio-visual program within each school building is necessary in order to have efficient and effective uses of audio-visual materials and equipment. Ordinarily, these coordinators will be regular classroom teachers who are given some released time to coordinate the program. The duties and responsibilities of this person include keeping teachers within his building informed about available materials, helping teachers to select suitable materials and assisting them in making better use of these materials, co-ordinating the orders for materials requested, scheduling materials and equipment, training personnel to operate equipment, assisting teachers in local production, supervising storage and repair, and acting as liaison between the school system audio-visual director and the personnel within his building. The building coordinators will need special training in the areas of selection, evaluation, organization and administration, and curricular integration. It is recommended therefore that this person have, in addition to the basic course in audio-visual instruction, a course specifically designed to cover these areas:

"Organization and Curricular Integration of Audio-Visual Media"

General Description

Discusses principles and practices in organizing, facilitating, and integrating the use of audio-visual materials in various types of school curricula and educational programs of youth and adult groups. Treats such factors as defining purposes of instruction, planning curricular units, selecting and evaluating materials in terms of defined teaching objectives, and improving the learning environment.

Content

-Philosophy and Integration:

Philosophy of Audio-Visual Education
Strength and Weakness of Audio-Visual utilization
Theories of modern curriculum practices
Integration of audio-visual media

-Selection and Evaluation:

Classification of audio-visual materials
Resources for selection
Criteria for selection
Methods and forms for evaluating

-Administration:

Role of the audio-visual building coordinator
Administrative functions of the building coordinator
In-service education program
Elements of successful audio-visual programs

-Organizing Instructional Units:

Analysis of instructional unit for audio-visual integration
Selection of audio-visual materials for the unit
Procurement of audio-visual materials
Teaching and evaluating the unit

These two courses, the basic course and the course in organization and curricular integration, would constitute sufficient college credit for fulfilling the professional requirements as a building coordinator. To become a highly successful building coordinator, the person needs additional training in the area of planning and preparation of instructional materials. A course in this area is strongly recommended as an elective.

District Director

The audio-visual director should be a member of the administrative team who critically analyzes the new audio-visual developments and their application to the local curriculum.

It should be recognized that the director with only minimum qualifications may find himself in an unfavorable position as he attempts to work side by side with other personnel who have extensive graduate study in their specialized areas.

The school system director should possess a masters' degree in audio-visual education. It is also recommended that part of this graduate study be done in the areas of educational administration, educational curriculum, educational psychology, general psychology, and sociology. The director in this field must be a combination of outstanding teacher, curriculum specialist, subject supervisor, and general administrator. He should be a person who has, as the center of his interest, an abiding faith in the desirability of working side by side with interested teachers and coordinators in furthering an understanding of the role of audio-visual materials and equipment for improving instruction in the classroom.

Among the specific minimum qualifications which the director should possess are: successful experience in classroom teaching; professional training in the areas of audio-visual utilization, organization and curricular integration, preparation of inexpensive instructional materials, and administration of audio-visual programs; competency in curriculum planning and its philosophy; and the ability to work well with teachers, building coordinators, fellow supervisors, and administrators.

The specific audio-visual training for meeting the minimum qualifications for a school system director would include the three courses previously outlined in this chapter plus a course specifically designed to train this director in the administrative aspects of equipment selection, budget considerations, film library, and other functions of administering the audio-visual center and school system audio-visual program:

"Administration of the Audio-Visual Program"

General Description

Considers the problems in management of an integrated program, including production, selection, utilization, and administration of audio and visual communication media; problems of finance; functions and organization of different services; relationships among school systems, colleges, and community and adult groups; and evaluation standards for the various services.

Content

-Nature and Role of Audio-Visual Administrator:

Function of audio-visual program
Development of audio-visual program within individual schools and school systems
Qualifications and duties of school personnel involved in improving instruction and relationship between audio-visual personnel and other school employees
Role of school system audio-visual director and school audio-visual coordinator in the production, selection, and distribution of audio-visual materials and equipment

-Physical Aspects of Audio-Visual Programs:

Minimum and optimum facilities
Equipment selection, acquisition, and evaluation
Audio-visual budget considerations and procedures
Film library size and requirements, rental vs. ownership
The audio-visual center

-Special Administrative Areas:

Audio-visual in-service training programs
Student assistant program
Public relations program

-Administration of New Audio-Visual Media:

Educational television
Language laboratory
Teaching machines

-Evaluation Techniques

It is desirable for the director to have some additional skills in the more advanced methods of local productions of instructional materials, such as: knowledge of photography in the production of slides, filmstrips, and motion pictures; knowledge of television production and radio broadcasting; technical knowledge of language laboratory equipment and sound recording; and knowledge of teaching machine programming.

It is also desirable for the school system director to have a more thorough knowledge of the theories of communications so that he might better interpret the place of audio-visual materials in the learning process. He should have understanding in the social-psychological aspects of communications and how they relate to educational situations. On the curriculum

team the audio-visual director should be the specialist in the area of motivation, perception, and learning theory.

It is recommended that in addition to the four courses previously discussed, additional training in the field of audio-visual education be directed to content areas similar to the courses listed here:

"Advanced Techniques in Audio-Visual Productions"

General Description

Designed to develop basic communications skills within an educational framework that relates the production of media to the cognitive behavior of audiences. Covers basic principles of photography and sound recordings and provides systematic and varied laboratory experiences in color slides, filmstrips, and motion pictures. Develops practical knowledge in the area of television production and radio broadcasting. Studies language laboratory equipment and programming for teaching machines.

"Survey of Audio-Visual Research"

General Description

Reviews motivation, perception, learning theory, and group dynamics in terms of communication processes. Surveys the area of communication from an educational and social-psychological point of view. Considers the particular function of non-verbal symbols in the communication process.

"Theory of Educational Communications"

General Description

Applies the basic concepts and principles of communication to problems in teaching and learning with school and adult audiences. Relates the philosophical and psychological bases of audio-visual communications to problems in teaching. Discusses the role of such communications in the general area of problem solving and attitude formation and treats specific communications problems in given teaching situations.

"Mass Media Theory"

General Description

A theoretical course which reviews accepted beliefs about instructor-student relationships in the learning processes with special emphasis on mass communications methods. Studies persuasive communications and opinion measurement. Emphasizes relation of audience analysis to effectiveness of communication. Studies communication models; sign, symbols, and meaning; and non-verbal communication.

The curricular integration of audio-visual experiences will be accomplished best when a school system has an effectively functioning audio-visual program. Since it is far easier not to use, or to use materials ineffectively, it becomes necessary to have an experienced audio-visual administrator to stimulate and direct the program within each school system. The scope of the program also requires that a part-time audio-visual person be employed in each school building to give immediate assistance and guidance to individual teachers. It can be seen then, that the success of audio-visual materials for the enrichment of educational experiences rests on the professional training of teachers and the establishment of an audio-visual program with specifically trained personnel.

Chapter Four

Audio-Visual Equipment and Instructional Material

Since specialized equipment is necessary to make use of many of these materials, it becomes a major administrative problem to provide this equipment . . . . .

Audio-Visual Equipment and Instructional Material

SINCE SPECIALIZED EQUIPMENT IS NECESSARY TO MAKE USE OF MANY OF THESE MATERIALS, IT BECOMES A MAJOR ADMINISTRATIVE PROBLEM TO PROVIDE THIS EQUIPMENT. Previous chapters have indicated that teachers can teach best and pupils can learn best when a wide variety of instructional materials and activities is provided by the school. Great care should be exercised in making selections. Good use of audio-visual materials by teachers depends, to a great extent, on pleasant experiences with the use of equipment. Poor, malfunctioning equipment discourages the use of material.

FACTORS IN CHOOSING EQUIPMENT

Usually, the audio-visual director will be charged with the responsibility for selecting equipment. However, principals, teachers, or teacher committees, and coordinators should have an opportunity to participate in the decision.

With so many makes and models of equipment available on the market, persons responsible for buying equipment need to understand the factors which make some types of equipment generally more desirable than others. They must realize that different models are manufactured to meet different needs. Most projectors will produce a satisfactory picture, and most sound equipment will produce acceptable sound, within limits of the manufacturer's recommended use. The wise buyer will select his equipment solely on the basis of the job he wants it to do.

Technical advances in audio-visual equipment are being made so rapidly that any specific list of minimum specifications for this equipment may become outdated even as it is compiled. Therefore, this section on equipment will refer to basic requirements of equipment in terms of their uses in certain environments.

Classifications of equipment, according to intended environment, are:

-"Low Output" of light and sound for small audiences (1-20) in a fully light-controlled, acoustically treated environment.

-"Medium Output" of light and sound for typical class sizes (20-50 students) in a fully light-controlled, acoustically treated environment.

-"High Output" of light and sound for large audiences (50-?) in fully light-controlled, acoustically treated auditoriums.

For the purpose of identifying these ranges with specific features on currently manufactured equipment, the following list is submitted:

1961 CLASSIFICATIONS

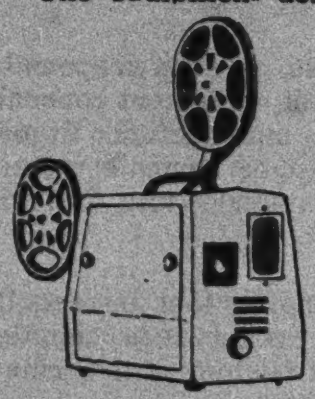
-Light	
low output	150-300 watts
medium output	500-750 watts
high output	1000-arc light
-Sound	
low output	2-3 watts
medium output	5-10 watts
high output	12 and above watts

The future usefulness of this table must be studied thoughtfully since there is every indication that new developments in projection lamp and lamp-housing design may produce a light output at only 300 watts that may deliver an image brightness equal to or better than present 500 watt lamps.

It is important that the prospective purchaser of equipment have an actual demonstration of equipment in its intended environment. Information concerning new equipment may be obtained from dealers, college and university audio-visual personnel, and from the state department of education. It is advisable that the district audio-visual director seek the aid and assistance of several of these sources rather than depend upon the judgment of a single dealer.

No one piece of audio-visual equipment currently being marketed can accommodate all the functions needed for material presentation. The motion picture projector can show filmed action sequences, but cannot show teacher or student-prepared drawings without expensive conversion to film. Slide projectors can show teacher-made or purchased still pictures, but cannot show action. Though there are some duo, tri and quadruple purpose machines being manufactured, a broad selection of machines of differing functions must be available to accommodate materials.

The equipment descriptions in this chapter include explanations of functions each serves:



16 MM SOUND MOTION PICTURE PROJECTOR

The 16 mm sound projector provides students with realistic and life like experiences which cannot be made possible through direct experiences.

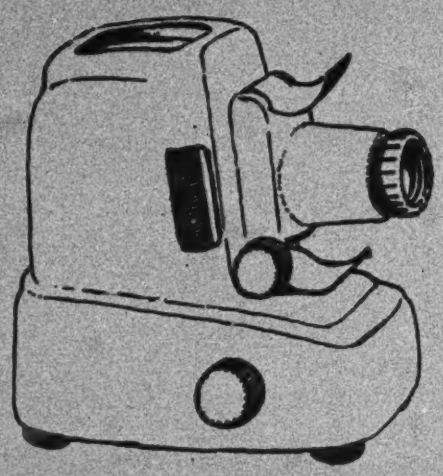
Numerous types of 16 mm sound projectors are available. If the school system has adequate classroom light control, a medium lamp output projector might be sufficient. The sound amplifier should be capable of producing medium output. For the average classroom, a single case projector and speaker will be adequate. If the projector is to be used in large classrooms or auditoriums, it should be capable of accepting a high output lamp, high output amplifier and extension speakers capable of handling the sound output. Some speakers can be supplied with supplemental sound amplifiers in them; this, with a lower output classroom type projector, will give adequate sound in large rooms or auditoriums.

Most manufacturers of motion picture projectors can supply their equipment with synthetic sapphire insets at points of wear. Such insets reduce the number of trips to repair stations and should be on all new equipment purchased. Zoom lenses are available and in schools with a large variety of room sizes such a lens facilitates image size variation. Projectors should have permanent oiling systems on them, otherwise; a rigid schedule will have to be set up for oiling and maintenance.

. . . . 16 MM MOTION PICTURE PROJECTOR

A time-lapse meter will assist in determining the efficiency of the projector in terms of hours in operation. Projectors are available with optional magnetic or optical sound systems on them. If the school desires to produce motion pictures, 8 mm or 16 mm, as a learning activity, magnetic sound reduces the cost of such productions to a realistic level. Some 16 mm sound projectors are available with rear-projection screen attached.

A careful survey of the conditions under which the projector is to be used will determine which type of equipment will function most efficiently for a given school system. Expendable supplies such as projection lamps, exciter lamps, photo electric cells, fuses, rewind belts, and take-up belts should be purchased for the projector. Mobile projection tables should be provided for ease of transportation. Take-up reels of 400, 800, 1200, and 1600 feet capacity should be purchased with the projector.



FILMSTRIP AND 2X2 SLIDE PROJECTORS

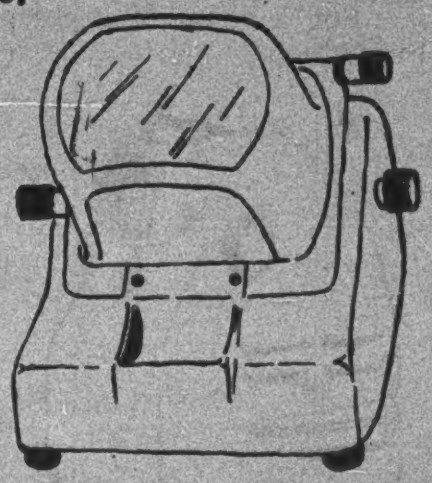
The filmstrip projector makes possible the presentation of single pictures in an ordered sequence to be used for a variety of functional learning experiences. Some types have associated sound, either disc or tape, built into them. If light control shades are available, the low output lamp might be sufficient, but for the average school the medium output would seem to be the most suitable. In cases where auditorium showings are necessary, a high output is needed.

In school systems where funds are limited a combination projector might be considered. Projectors of this type will project 35 mm filmstrips, and 2" X 2" slides. These multi-purpose projectors operate manually. In single purpose machines, automatic or semi-automatic projectors are available.

When sufficient funds are available schools should own single purpose projectors. This will avoid unnecessary overlap of function and reduce conflict in booking of equipment for use.

When purchasing filmstrip projectors with associated sound systems, portability, ease of assembly, and operation are of prime importance. A careful investigation into the types of discs for playback will dictate whether a 12" or a 16" tone arm will be needed. When the sound is on tape the two standard speeds of 3 3/4" and 7 1/2" should be available.

FILMSTRIP AND SLIDE PREVIEWERS

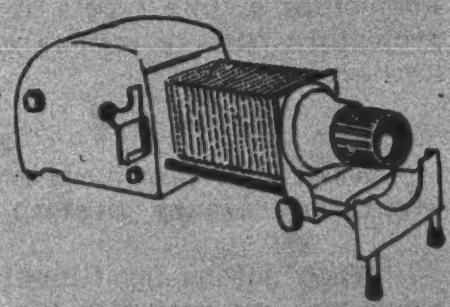


Individuals frequently study slides and filmstrips. Regular projectors require a room with light control. The previewer is designed to be used by an individual at his desk, in normal room light without interfering with the rest of his class.

The previewer should be large enough to give an adequate image but not so large as to take up unnecessary work room on the desk. If they are power-operated, additional outlets will need to be installed in the room. If they are battery operated, a supply of batteries will need to be kept on hand.

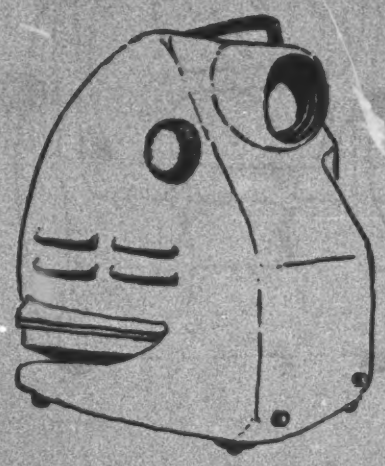
. . . . . INDIVIDUAL STUDY

3¼" X 4" STANDARD LANTERN SLIDE PROJECTORS



Commercially prepared slides for this type of projector are no longer numerous; still this projector has many uses in the classroom today. Slides made by teacher or pupil can be produced in the classroom as a valuable learning activity. If the school has an old projector of this type, it can be rehabilitated in many cases and put to work in the classroom. Some of the newer 3 1/4" X 4" slide projectors are of the overhead type. Etched glass, frosted cellophane, and cellophane carbon are some of the materials that should be purchased to support the activities available through this type projector.

For a complete description of production suggestions we refer you to the chapter on "Local Production."

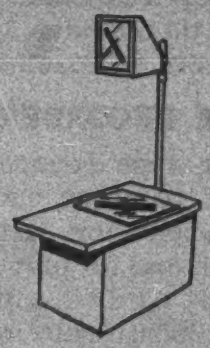


OPAQUE PROJECTOR

This machine will project images of opaque materials such as maps, photographs, charts, diagrams, graphs, small three-dimensional objects, and text from newspapers, magazines, and books. This allows group viewing of many visuals and small objects that otherwise might have to be passed from pupil to pupil. By collecting and mounting the pictures that appear in magazines and newspapers and using the opaque projector the classroom teacher can maintain an inexpensive file of up-to-date visual materials for her class. An efficient system for room darkening is essential and the projector must have a high output lamp. These projectors will accept any size material up to 10" X 12".

The projector should be equipped with motor driven cooling system, vacuum or forced air system for copy hold-down, automatic roll feed, aperture of not less than 10" X 10", coated lenses and reflecting mirrors of high optical quality. The copy platform for opaque material should be adjustable so that it will project textbooks and other materials of similar thickness. A cover glass is desirable for the projection of books or magazines. This same cover glass should be of the heat-absorption type so that there will be no damage to materials projected for long periods of time.

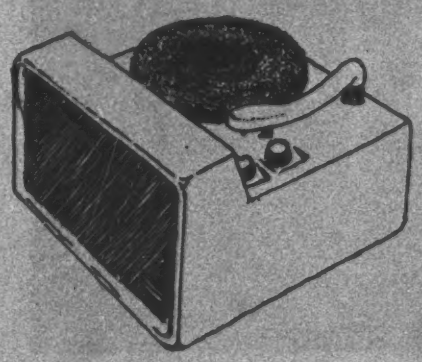
OVERHEAD PROJECTOR



This machine is placed to the side of the instructor, or mounted in his desk. Images from a large transparency can be projected above and behind him so that the class has a clear view of the materials presented. The teacher faces the class while using the machine. (By using marking pencils with a cellophane roll, extemporaneously prepared material can be projected on the screen.) Both commercial and teacher-made transparencies can be projected. It is important to note that this machine will function in a normally lighted room.

Overhead projectors are available with a wide variety of apertures. The 10 X 10 inch aperture is the most widely used. Both medium and high output lamps are available. Transporting these projectors presents the same problem as opaque projectors, and a mobile table provides the best solution. Expendable supplies such as cellophane rolls, transparent plastic and marking pencils should be purchased also with the machine.

RECORD PLAYER



Phono equipment is manufactured largely for the "home market." Many of the models, styles and brands from which the educator must choose have modern lines, but not ruggedness; compactness, but not fidelity; excellent reproduction, but not durability. School use demands careful selection from the confusing array available. Sound of low, medium and high output is available. Low or medium sound output is sufficient for classroom use. High sound output is required in auditoriums.

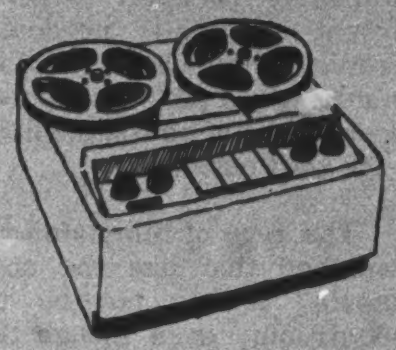
There should be no compromise with quality in this type of equipment. Cheap record players cause poor reproduction and record

damage. For financial reasons it may be necessary to purchase a combination record player--public address system, but where possible these two functions should be separated. Record players with separate **Bass, Treble and Volume** controls are preferred. A weighted rim-driven turntable with a four pole motor is recommended. The standard speeds of 78, 45, 33 1/3, and 16 rpm should be available. A variable speed control is desirable but not essential. Microphone inputs should be available as well as a preamplifier output. Avoid belt driven turntables and all purpose needles. For good reproduction, the frequency response should range from 40 to 15,000 cycles per second. Most portable record players do not have a high quality speaker. If a supplementary speaker is purchased, it should be completely enclosed in a suitable baffle box.

TAPE RECORDER

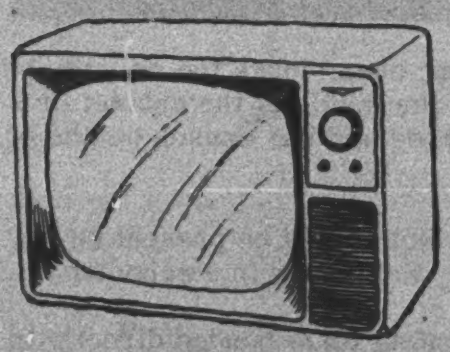
The tape recorder is used to store audio information for later playback and for playing pre-recorded tapes from educational materials centers and commercial sources. Radio broadcasts may be recorded and used in class at the time it meets the class needs. Individuals or groups may record discussions or plays for preservation. Recently its use in foreign language instruction has become important. Teacher-prepared drill material for individual or group use is another useful function of tape recording.

Simplicity of operation is of prime importance. Push button or keyboard operation is preferred. An auxiliary speaker connection of low to medium power output will give good sound coverage in most cases. A preamplifier output is needed for transcribing tape to tape. Frequency response of 40 to 15,000 cycles per second at 7 1/2" will give adequate response for most recording playback needs.



As with record players, selecting a tape recorder is a difficult problem. Most "school use" machines range between $140.00 and $350.00. Professional equipment above this price should not be purchased unless there is a special need. In most cases a half-track recording head will be adequate. Full-track heads should be purchased for recorders for utmost fidelity requirements, such as music or radio broadcast use. The tape recorder should have the two standard speeds: 7 1/2" and 3 3/4" per second.

TELEVISION SETS



The increasing availability of commercial television programs of instructional value, educational television station programming and school-owned closed-circuit television makes the purchase of television sets an important consideration.

Too often sets are gifts from school-affiliated groups whose main criteria is attractiveness of cabinetry or ability to purchase at an attractive price.

Screen sizes currently available are limited to 24". With this screen size two sets should be provided per classroom of average size. Front-mounted speakers of external speakers should be used.

It is desirable in all cases that a television receiver used in a school should be mounted on something that provides a considerable degree of mobility so that it can be moved from room to room with ease and safety and turned into the position most desirable at a given time. In many stances the receiver will be placed on a relatively tall stand at the front of a classroom in a position where it can be viewed easily by everyone in the class.

A television set in which electric potentials as high as 23,000 volts or more may be present, can be a very dangerous appliance under some unusual circumstances. No school should have or use a television receiver that does not carry the Underwriters Laboratories' label or emblem, UL.

One important requirement is that there be a shield at the rear of the set. In addition, there is a requirement that an interlocking device must be provided that disconnects automatically the power connection entering the set at any time when the shield or backboard at the rear is removed. In front of the picture tube there must be a protective transparent plate of such strength as to protect the tube from breakage if it should happen that the front of the television set receives a reasonably hard blow.

Good ventilation is essential because of the great amount of heat generated by the tubes and other components inside the television set.

In seeking to produce inexpensive television receivers, manufacturers have often employed selenium or silicon rectifiers to provide the high-voltate direct current needed in the tube circuits. A much better design from a safety standpoint uses a transformer and vacuum-tube or

solid-state rectifier to get the direct-current electricity needed. With many receivers, the whole metal chassis may be at full line (120-volt) potential or not, depending only on the position of the plug in the wall outlet.

The type of television receiver just described that has the so-called "hot chassis" should not be used in the schoolroom, even though the design is such that the chassis seems completely shielded from exploring fingers. Television receivers that have rectifier systems using transformers are the kind to buy or rent.

Particularly objectionable from a safety standpoint are metal cabinets, and this design should be avoided. No television set employing a metal cabinet should be used in a schoolroom, even though the set may be entirely safe electrically when new. A loose, frayed wire touching the inside of the cabinet or a very slight mistake in manufacture or in servicing the set has occurred and has caused deaths of children.

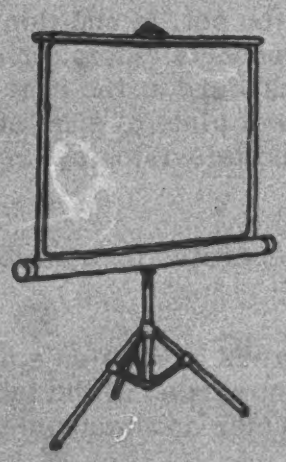
Thus there is no doubt that a strong well-built wooden cabinet should be present on any television set, particularly the large ones such as are likely to be used in a schoolroom.

There is reason to believe that picture tubes which have the safety plate bonded directly to the face of the picture tube are less subject to implosion than those in which the safety shield is a separate piece of heavy glass or plastic.

Any cart or stand upon which the receiver is placed so that it can be moved about on wheels or casters must be a rugged one, and the legs must be set far apart, so that any tendency of the set or the stand to tip over will be at a minimum.

The lightweight parallel-type line cord with which television sets are commonly equipped (a kind of wire that looks like ordinary lamp cord) is satisfactory for home use, but is not recommended for use in a set placed in a schoolroom. For such use, a serviceman should remove the parallel-wire cord and install a length of type SJ of SJT wire.

SCREENS



Projection equipment requires special surfaces of adequate size on which to reproduce images. There are three basic types of screens: beaded, matte white, and lenticular.

-The **beaded screen** is excellent for color projection, but has a narrow-viewing angle. It is very sensitive to interfering light and should be used only in rooms with adequate light control. It is best used in long narrow rooms. Use in square rooms should be avoided unless the teacher takes special care to rearrange the seating in a narrow-grouping to take advantage of the best viewing area. Because of its high reflective surface, glare becomes a problem in small rooms if the lamp in the projector is medium output or greater.

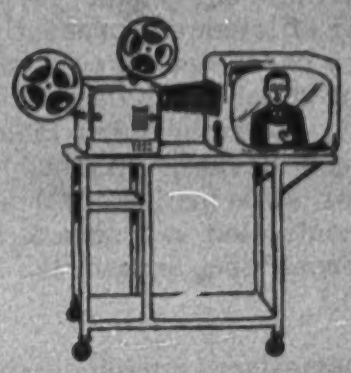
-The **matte white screen** has a wider viewing angle. Its pebble-grained or woven surface pattern makes it an excellent screen to use in most classroom situations. The glare problem is reduced. Interfering light does not "wash out" the picture as much as on the beaded screen. For projectors having medium output or greater, this screen gives good results.

-The **lenticular screen**, in silver or white surface, appears to be the best surface available at the present time. In most situations it has a 180° viewing angle. Interfering light has less effect on the image. This is a relatively expensive type of screen.

Every classroom should have a permanent wall mounted projector screen. For all types of projection this should be a 70" X 70" square. Several 70" X 70" portable tripod screens should be available for mobile use.

-The **rear projection** screen is a transluscent material usually mounted on a housing which contains a motion picture projector and/or other projectors. The image is projected on one side of the screen and students view from the other side.

The convenience of having a self-contained projection unit which is highly mobile is rear-screen's greatest contribution. Present equipment is relatively expensive and the alleged efficiency in rooms which have inadequate light control is debatable.



LANGUAGE LABORATORIES

The language laboratory is a special room in which the students can have independently, under their personal control, all of the elements needed to practice a language through the use of electronic equipment.

Basically, equipment should be of simple and durable construction; be easy and convenient to operate; have no shock or fire hazards; be mechanically quiet, and require a minimum of maintenance and repair. Equipment should be purchased from companies of good reputation who have extensive experience in this field. The availability of spare parts and of repair and overhaul services is an important consideration. Written guarantees of performance, according to specifications, should be obtained.

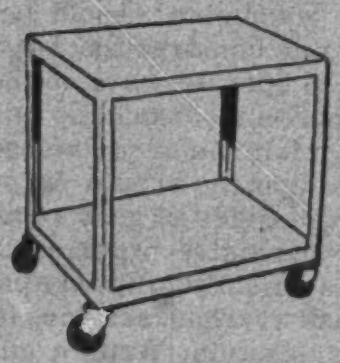
Administrative and teaching personnel should work together in deciding first of all what type of foreign language program would be the best for that particular school and what can be achieved within the limits of its resources.

The performance of an installation should be evaluated in terms of what the equipment is capable of contributing toward the improvement of instruction. Simplicity, flexibility, and durability should be weighed against the chief criterion for all audio equipment: fidelity of the sound. The quality of the sound that reaches the student's ear is the crucial element. This is too often overlooked.

READING IMPROVEMENT EQUIPMENT

Special equipment for improving reading efficiency is presently available. In many cases reading equipment is in the form of attachments that can be affixed to existing projectors. The tachistocope is one such device. Attached to a filmstrip or slide projector, this device allows controlled exposure at speeds that vary from one second to 1/100 of a second.

Specialized equipment is available to increase gradually the speed with which the student reads, create increasingly more efficient eye movement and prevent returning to previously covered materials. Some of these instruments are mechanical attachments for use with common text materials. Others are specially designed projectors which use specially prepared material.



PROJECTION STANDS

Audio-visual equipment and materials should be easily accessible to teachers in order to save valuable time and encourage effective educational use. Equipment such as motion picture, opaque and over head projectors, television receivers and tape recorders should be installed fully assembled, ready to plug in and operate, on rolling projection stands of appropriate dimensions. These stands should be 42" high with a top area about 18 inches x 24 inches, and roll on rubber-tired wheels not less than 3 inches in diameter, equipped with braking facilities. Overhead projectors should be kept on 36" stands.

PROMISING THINGS OF THE FUTURE

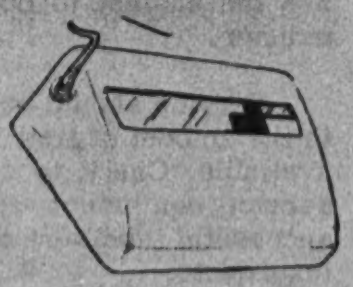
8mm Sound Motion Pictures

Recorded sound on 8 mm film is now possible and this could mean a reduction in cost of sound film to the extent that local schools could own complete libraries. This would mean a higher utilization because the materials would be closer to the individual classroom.

Magnetic Video Tape

Television signals can now be put on magnetic tape. Although the initial cost of such tape recorders is high, its broadening use in both closed and open circuit television operations is apparent. In urban centers the per capita cost of such tape recorders is reduced to a reasonable level and the multiple use potential of this device offers a solution to many problems of mass distribution of audio-visual materials.

Self-Instructional Devices



Perhaps the greatest impact on education in coming years will be the introduction of teaching machines. This equipment, along with programmed textbooks, may cause a profound change in teaching methods. These devices vary from simple masks for programmed texts, through highly sophisticated machinery. Most require written responses which are verified instantly and in some cased tabulated immediately. Still other types of machines record responses by hole punching or erasures of tab-stripping. The most complicated machines employ projected film strip materials in connection with selection push buttons to indicate answers. Programming the materials used on these machines is a complicated process and appears to be the key to the learning process involved.

HOW MUCH EQUIPMENT IS NEEDED?

The aspiration level of the community and school administration for an effective instructional program . . . . the economic condition of the school district . . . . the availability of audio-visual materials for use . . . . the level of competency of the teaching staff . . . . these and other considerations must be taken into account when determining how much equipment is needed by specific schools.

A nebulous, but true, rule is: As little as possible and as much as necessary to provide teachers with what they need when they need it. As factors change, so must the list:

MINIMUM REQUIREMENTS FOR AN AUDIO-VISUAL PROGRAM

Equipment	
16 mm Sound Projectors	1 per 200 students or major fraction thereof at least 2 per building (or 1 per floor level in multi-level schools)
Filmstrip and 2 X 2 Slide Projector	1 per 200 students or major fraction thereof at least 1 per building (or floor level in multi-level schools)
Opaque Projector	1 per building (or floor level in multi-level schools)
Record Player (4 speed)	1 per kindergarten and first grade class-section 1 per 3 classrooms in other elementary grades at least 2 per building in junior and senior high schools
Tape Recorder	1 per 200 students; at least 2 per building
AM - FM Radio Receivers	1 per 5 classrooms; at least 2 per building (where appropriate program materials are available)
Overhead Projector (7 X 7 or larger)	1 per building (or floor level in multi-level schools)
Screen, Projection	1 per classroom
Screen, Tripod portable (70 X 70)	2 per building
Television Receivers	at least 1 per floor (where appropriate program materials are available)
Projection Stand	1 for each piece of equipment
Filmstrip Previewers	1 per floor

FACTOR FOR CONSIDERATION IN SELECTING SPECIFIC EQUIPMENT

A perplexing problem the administrator faces is the selection of a specific make or model of equipment. Audio-visual education will continue to make rapid strides if the equipment is easy to operate. The mechanics involved in operating projectors is frequently a deterrent to classroom use. When purchasing equipment it is wise to have the dealer demonstrate the projector to the faculty. Several of the teachers should then attempt to operate the equipment. Several dealers, demonstrating various brands of equipment, give the teachers a chance to find out which projectors are the easiest to operate. Selection should be based in part upon the opinions developed in this manner.

Service should be a part of the purchase price or contract. There is often a great difference in the amount of time certain projectors are in the repair station and the degrees of workmanship available. Check to see that the repair station has an adequate supply of spare parts, electronic service equipment, and tools. An investigation of this type often means the difference between a successful audio-visual program and one that is unsatisfactory because equipment service is inadequate.

A copy of some variation of the following statements attached to each purchase request will greatly assist the administrator in obtaining the proper service for his equipment.

SPECIFICATIONS FOR SERVICE

-The vendor must deliver the equipment unpacked, set up and ready to operate, and must check to make sure that all accessories, spare reels, line cords, etc., are present and in working order.

-He must check the equipment at time of delivery to determine that it operates properly in the location where it is to be used.

-The vendor must be prepared to furnish authorized factory repair service for the equipment, within the state of **Missouri** or city of _____.

-He must maintain in stock such consumable items (lamps, tubes, belts, etc.) as are necessary to provide for the normal operation of the equipment.

-The vendor must maintain or have immediately available within the state of **Missouri** or city of _____, a reasonable stock of spare mechanical parts for the equipment.

-The vendor must be prepared to furnish rental (or loan) equipment upon reasonable notice for use while this equipment is undergoing repairs.

AVAILABLE ASSISTANCE WHEN MAKING PURCHASES

Assistance in selection of equipment is available on three levels. The MSTA-Department of Audio-Visual Education provides consultant service to public schools. Requests for such assistance should be requested through MSTA, Columbia, Missouri. The State Department of Education, Jefferson City, has an audio-visual consultant available. The University of Missouri and all the State Colleges have audio-visual directors who can give advice when needed.

TYPES OF AUDIO-VISUAL MATERIALS

AUDIO VISUAL INSTRUCTIONAL MATERIALS HAVE INTRINSIC INFORMATION IN A FORM WHICH IS CONSIDERED THE MOST ECONOMICAL AND EFFECTIVE WAY OF PRESENTING THAT INFORMATION. In this respect they differ from the previously described equipment. Audio-visual equipment transmits materials; materials transmit information. Without a quantity of pertinent materials, equipment is valueless.

Following are descriptions and considerations of various materials.

CHALKBOARD MATERIAL

Chalkboards are as much a part of the school equipment as desks for the teacher and pupils. Chalkboard materials for writing, drawing, and illustrating should be available to every classroom teacher; these include white and colored chalk, erasers, rulers, compasses, templates, stencils, etc. The chalkboard is a universally available teaching device. With proper materials and reasonable study and practice anyone can learn to use it effectively.

DISPLAY MATERIAL

A display is an arrangement of materials put together to call attention to some activity. It may be put on a bulletin board, tackboard, or any other display area. These display areas are devices for displaying photographs, posters, small three-dimensional objects, pictures, charts or other teaching materials. While many display materials will be produced locally by teacher and students, many of them also can be purchased from school supply companies, book stores, and other sources of audio-visual materials.

FLAT PICTURES

The flat picture is the most available and least expensive audio-visual material. Maps, charts, and graphs, along with flat pictures, may be used to communicate facts and concepts difficult to describe.

Flat pictures when carefully chosen are an important type of audio-visual materials. Pictures are effective as a means of communicating ideas and should be selected on the basis of artistic quality, clarity, size, interest and validity. Flat pictures should be used with specific purposes in mind.

RECORDS AND TRANSCRIPTIONS

Records and transcriptions are used extensively because of the wide variety of instructional content that has been recorded. The available recorded materials touch practically every area of the school curriculum and are available for every age level. These materials are not "automatic teachers." They need to be integrated with the total educational program. These materials are available in four different speeds: 16, 33 1/3, 45, and 78 RPM. Many record players are equipped to handle all four speeds.

TAPE RECORDINGS

The only feasible method for making audio materials in the school is by use of the magnetic recorder. Such locally prepared materials can be used to "customize" instruction to fit the local needs. If proper techniques and good equipment are used, the quality of reproduction can be comparable to commercially prepared tape recordings.

Various instructional materials centers throughout the country have tape libraries. A wide variety of taped materials is available from these repositories at nominal fees.

Many text book and recording companies have subject-correlated pre-recorded tapes available. Music and foreign language are two subjects which are especially well suited to this type of audio material.

The possiblity of using the same tape over and over, the excellent fidelity of sound possible, and the absence of damage-factors (needle scratch, dust and irreparable breakage) make tape recording a fast growing medium of instruction.

SLIDES AND FILMSTRIPS

When still pictures, with or without color, are required, the most compact, durable and economical form for preserving these materials are slides and/or filmstrips.

Slides can be arranged in a variety of sequences, allowing changes of emphasis and order to meet specific instructional requirements. In this respect they are superior to filmstrips. However, the desire to maintain a planned sequence can best be satisfied by use of the filmstrip.

In essence, slides are individual frames of filmstrips. The resulting images on the screen and the educational applications of each are indistinguishable.

Although possible, teacher-made filmstrips are difficult to produce (compared to slides). Teacher-made slides are coming into prominence as a result of the experience gained by teacher-hobbyists who record vacations with 35 mm cameras.

Both subject-correlated filmstrips and slides are available from commercial producers.

Coordination of slide or filmstrip images with records or tape recordings is becoming quite common. Many subjects formerly relegated to the motion picture medium can be taught as effectively and more cheaply by such picture-sound synchronized materials.

A larger-sized slide 3 1/4 X 4, called the standard slide (also known as lantern slide) is becoming less common as other materials take over its function. The overhead projector transparency (discussed elsewhere) is absorbing the hand-made materials of standard slides; the 35 mm slide (discussed above) is absorbing the photographed materials of standard slides. In special areas, commercially produced materials are available in 3 1/4 X 4 slide form and there seems to be a tendency to expand the amount of materials available from commercial sources.

TRANSPARENCIES

Although the name "transparency" is frequently applied to slides, the current meaning in audio-visual nomenclature is a large (7" X 7", 8" X 10", or 10" X 10") transparent slide with translucent image used on the overhead projectors. There are abundant methods for converting normally opaque materials (such as book pages) to transparency form. There are equally abundant methods for preparing materials extemporaneously during the instructional process.

Transparencies can be projected in a relatively light environment. They are sufficiently large to allow hand-preparation with less than an engraver's steady hand.

Commercial availability of transparencies is quite limited at present. This is to be expected, however, since transparencies, like opaque projector and tape recorder materials, lend themselves to local preparation of "custom" design.

EDUCATIONAL MOTION PICTURE FILM

Many motion pictures used in schools were not designed to have an instructional function. Entertainment feature films, amusing short subjects, and institutional or product advertising documentaries are frequently adapted (with partial success) to school-child audiences.

Educational films are those prepared specifically for instructional purposes to be used by an intended audience. The versatility of the motion picture medium has caused it to be the major "carrier" of information in all subjects and all grade levels.

Local production of educational motion pictures is quite limited, today. The high degree of proficiency required in planning, shooting and editing of film and the relatively high cost of proper equipment causes most schools to rely entirely on commercial producers.

Sixteen mm sound film (both black-and-white and color) has become the standard for educational films. Local preparation of magnetic sound tracks is gaining prominence through the development of projectors and film "striping" process. This local preparation of special sound tracks, is accomplished by having a film coated with a thin stripe of the same iron oxide used on magnetic recording tapes. Special magnetic/optical sound track projectors allow recording, playing and erasing of these special sound tracks.

To purchase an adequate supply of filmed materials presents a great financial burden for all but the largest school districts. Areas of high population density, high assessed valuation and abundance of projection equipment have their own educational motion picture libraries. Most districts rely on renting films from educational film libraries located on college and university campuses.

THREE DIMENSIONAL MATERIALS

A large array of materials fall under the three dimensional materials category. This includes models, globes, mounted specimens, dioramas and most realia (actual objects used for study purposes). Through use of models, things (the earth, for one) can be reduced in size for study or (atoms, for another example) can be enlarged for study. Things may be cut away (such as engines) or dissected (like the human ear) for study. Representations, called mock ups, may be economical substitutes; the driver training devices usually are of this type.

Most audio-visual materials appeal to the senses of hearing and sight; hence, the name: audio-visual. Through three-dimensional materials the sense of touch is often employed; learning is reinforced by handling, operating, or inspecting.

Simpler forms of three dimensional materials can be made by students and teachers. Highly sophisticated materials are available from scientific supply houses, text book companies and map companies.

In the field of audio-visual education new materials constantly are being perfected and made available to teachers on all levels. When new materials appear older materials may become

obsolete. Projectors of various kinds have been improved and perfected along with the teaching materials which are used with them.

Recordings and recording equipment have experienced a great deal of improvement in recent years along with other audio-visual materials and equipment.

Today, a newcomer has arrived which uses mass production of teaching materials for individualized instruction. This newcomer is called the "teaching machine" which brings the student in contact with programmed materials. Programmed teaching is a method of self-instruction which has been developed chiefly in those fields of learning where the basic elements are predictable and systematic.

Many of these teaching machines are being used in the classroom today with a great deal of success. However, most are still in the experimental stage. In this field, vigorous research constantly is going on in order to bring to the classroom teacher the tools and materials needed to do a good job.

EDUCATIONAL BROADCASTING AND TELECASTING

School participation in educational radio and television usually is limited to providing for reception of programming and integrating the programs in the local curriculum and teaching plans. This sort of participation requires the installation of antennae designed efficiently to receive radio and/or television signals and relay them to outlets in classrooms. Properly selected receivers are made available to teachers.

Effective employment of radio and television programming requires that teachers learn what programs are scheduled, obtain advance information of program content from the broadcast source, and plan teaching procedures so that the aired programming is received at the best psychological moment. Both radio and television programming are presented on necessarily fixed schedules. Sometimes it is difficult for a broadcaster to match the variety of bell schedules, curricular sequences and unique situations found in the many schools of its broadcast coverage.

In an increasing number of areas, school participation in educational radio and television goes beyond the reception-only stage. Some districts, individually or cooperatively, operate broadcasting and telecasting facilities. The financing, equipping, staffing, planning and teaching is done by these districts for the express purpose of suiting their specific needs.

Efficient deployment of hard-to-find talents, mass communication of lecture-demonstrations which can be presented efficiently to masses, sharing of special contributors or objects with groups who otherwise would be deprived of these resources . . . . these and other reasons motivate schools to own and operate radio and broadcast facilities.

No matter to what degree the participation, or to what complexity the equipment may be involved, radio and television programing are, in educational context, two more forms of communication. Each has a valuable function. Each has problems with which to contend. As with other audio-visual equipment and materials, radio and television can be useful in carrying part of the instructional burden.

TYPE OF EDUCATIONAL RADIO

AM (amplitude modulation) is the form of transmission used in most commercial radio broadcasting. AM radio is subject to electrical interference much more than FM (frequency modulation). However, FM transmission will not carry as far as AM of comparable cost and complexity. It is easier, at present, to obtain a license from the Federal Communications Commission for the operation of an FM station than AM. The greater fidelity of FM sound and the relative ease in obtaining a license has caused FM to be the predominant form of educational radio.

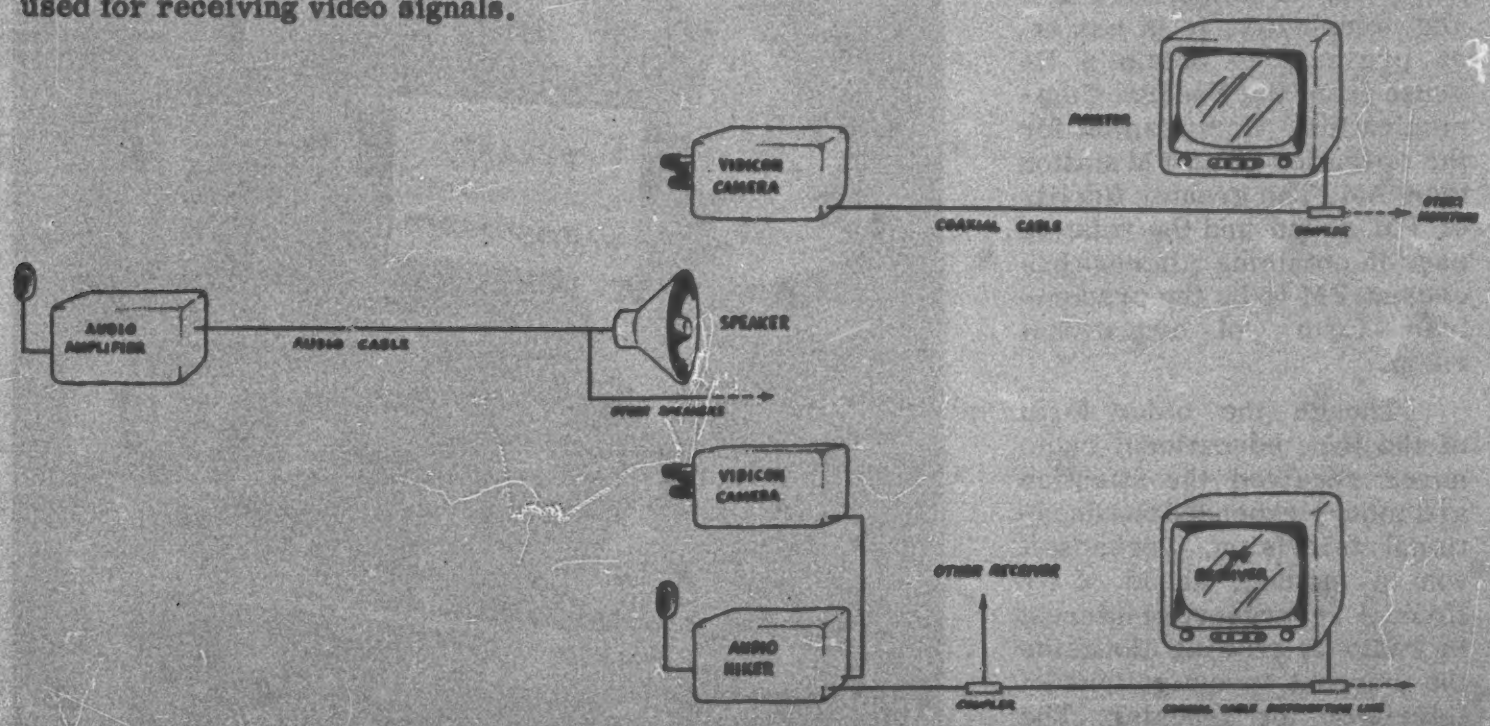
Though the older form of the two, educational radio never received the attention and money expended on educational television. Perhaps it was a medium ahead of its time. A resurgence of interest in radio is growing alongside the current investigations of television for teaching. The ease with which radio programs can be tape-recorded by teachers, for delayed use at appropriate times and the need for a mass communications medium at less expense

than television are contributing factors to the new rise in educational radio. Regional, state and national networks are being planned and some are already in operation.

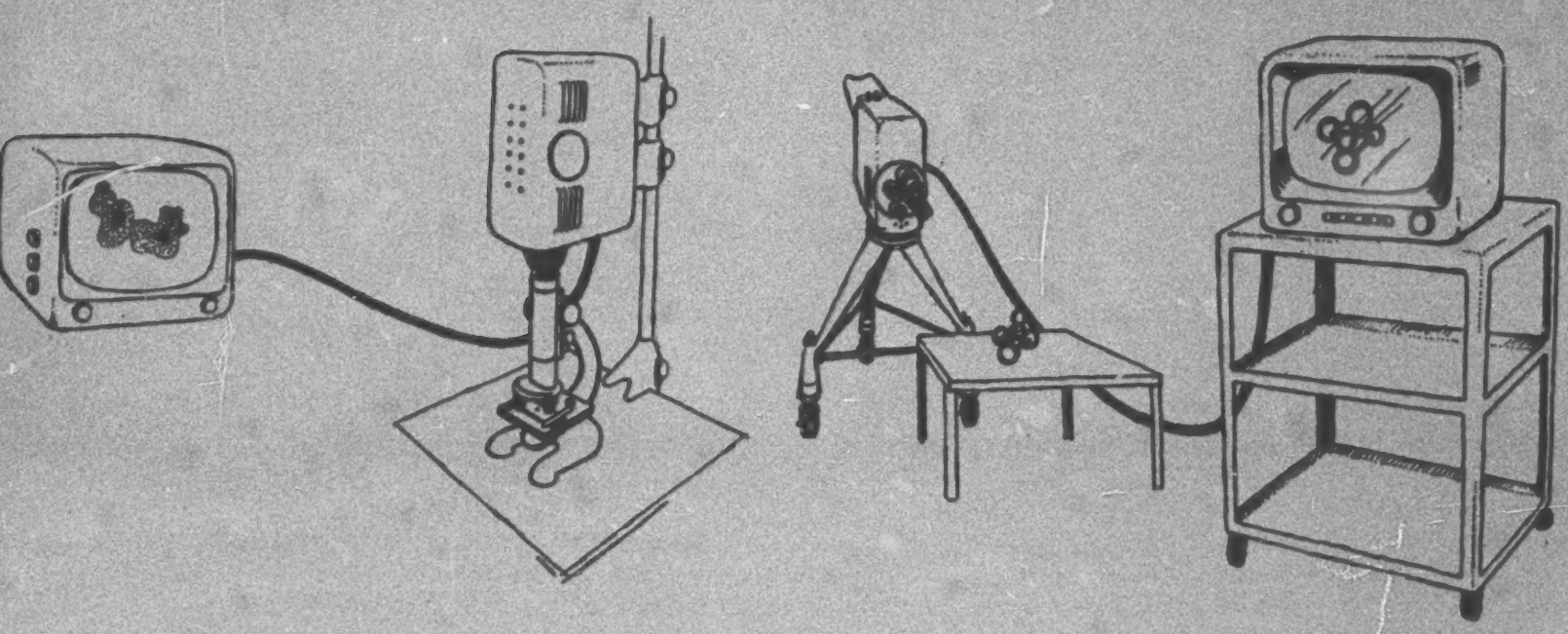
TYPES OF EDUCATIONAL TELEVISION

Educational television can be classified in several ways: Open-circuit television is broadcast (either low-powered for short coverage or high-powered for greater distance in the same manner and with the same equipment as commercial stations use. Open-circuit television may be UHF (ultra-high frequency) or VHF (very-high frequency). Open-circuit can be received on any television receiver within the telecast radius which is tuned to the proper channel. Many commercial stations offer programs, in and out of school time, of educational value. If these current event, dramatic, travelogue or interview programs are assigned for use in, or in conjunction with, a teaching unit, this is using open-circuit educational television. More often the term open-circuit educational television is used when referring to school-owned stations which program for the in-school audiences. This programing may be intended as supplemental material or designed to carry the major burden of teaching, (in which case the television teacher is a partner of the classroom teacher and they form a teaching team).

Closed circuit educational television may be telecast through the air in micro-waves (very narrow beams of television signal directed to a specific location) or cabled (on coaxial cables which are simply wires shielded from external electrical impulses). Closed-circuit television is "closed" in the respect that television receivers must be hooked to cables which terminate at the program orientation point. It is open only to these wired-receivers. Closed-circuit systems may use RF (radio-frequency) or Video (picture only) distribution. RF and Video may be likened to the AM and FM forms of radio transmission to the extent that they are alternate forms of signal delivery from which one must choose. RF signals carry both picture and sound information on a single cable. Video signals carry only the picture portion of programing. A separate sound cable must be used. Home receivers are "RF receivers." Special receivers, called "monitors," must be used for receiving video signals.



Closed-circuit television programing, in its simplest form, can be achieved for less than one thousand dollars. This minimum setup, for example, would allow the magnification of demonstration objects or closeup viewing of inherently dangerous operations. The maximum closed-circuit installation would cost hundreds of thousands of dollars and would be comparable to any commercial or educational television station. It would vary only in the respect that its programs are transmitted by wires to the receivers rather than going through the air.



Over 50 open-circuit educational television stations are on the air, at present. They serve varying clientele . . . . colleges, metropolitan school systems, state-wide networks and rural areas. Well over a thousand closed-circuit installations can be found in individual school departments, school buildings, college campus networks and even distributing to hundreds of schools in remote areas.

Holding programing for delayed use is achieved by tape recording, when radio is used. The same function is served by kinescope (a special television process) recorders and video-tape recorders, when television is used.

Costs are being reduced, technological simplification is being achieved, teachers are becoming more accustomed to the media and research is proving . . . . that radio and television can be effective methods of communication along with the motion picture projectors and other audio-visual equipment and material.

Teacher Suggestions for Revision

Chapter Five

Instructional Materials Centers

Although many commercially prepared materials for instructional purposes are available, these materials cannot possibly fit all teaching situations . . . . . .

Instructional Materials Centers

ALTHOUGH MANY COMMERCIALLY PREPARED MATERIALS FOR INSTRUCTIONAL PURPOSES ARE AVAILABLE, THESE MATERIALS CANNOT POSSIBLY FIT ALL TEACHING SITUATIONS. A great variety of learning experiences are required to meet the needs of a variety of students. The classroom teacher is a prime factor in identifying curriculum needs of individual students. It is essential, therefore, that the teacher be given the opportunity to create and develop instructional materials in order that both curriculum goals and student learning goals may be attained.

Preparation of materials through combined efforts of teachers and pupils can be a learning experience within itself. The involvement of children in such activities makes them a part of the child's immediate concern and need and is, therefore, a powerful motivating force.

Many occasions arise in which administrators and teachers find it necessary to interpret the school program to school patrons. Locally prepared materials are closely related to the particular school program and present the information more successfully.

The instructional materials which can be prepared locally are numerous. What can be done is dependent largely on administrative direction, audio-visual leadership, and teacher interest and ingenuity.

NON-PROJECTED MATERIALS

Almost all teachers already have collections of pictures for bulletin boards and other teaching purposes. Mounting of these pictures adds to their attractiveness, as well as to their permanency. Equipment should include mounting press, iron, and dry mounting tissue for dry mounting purposes and muslin or percale for wet mounting purposes. Other mounting techniques require supplies such as construction paper, show cardboard, rubber cement, paste, and mucilage. Basic to the development of good bulletin boards, as well as to other teacher prepared materials, are lettering guides and mechanical lettering devices.

Many different types of maps, charts, graphs, diagrams, and posters can be prepared by teachers and students and can be instrumental in the achievement of numerous, specific learning goals. Paper, inks, lettering and ruling pens, paints, brushes, and crayons are necessary to their preparation.

It is not unusual to find children in classrooms constructing models, mock-ups, and dioramas and in so doing, bringing realism and understanding to learning. Such materials as paper, wood, metal, plastics, plaster, clay and wax provide both pupils and teachers with unlimited possibilities for creativeness.

PROJECTED MATERIALS

Since the opaque projector will project most non-transparent materials, there is no limit to the type of materials a teacher can use so long as size permits. Materials for opaque projection require little in their preparation aside from their own innate construction or mounting. Both 3-D and flat materials can be used. Although objects and specimens may not require special preparation, ample space for storage should be provided. Cartons, glass or cellophane containers which are clearly marked, facilitate use of specimens and objects by making them more easily accessible. The mounting materials required are dependent on the types of specimens to be mounted.

The materials which can be prepared for use with the overhead projector are numerous. Anything that can be written, drawn, or photographed on a transparency can be projected. Techniques of preparation range from the very simple operation of writing or sketching with a marking pencil on cellophane to the development of more complex overlays photographically. Many techniques have been developed through which instructors can prepare their own materials easily for temporary or repeated use. Many office copy machines are now useful as transparency-makers.

The local community has a rich variety of materials which can be utilized in the classroom and recorded permanently on slides, filmstrips, or motion picture film. Teachers can make their own illustrations, or photograph travel experiences, exhibits, or field trips. Photography supply firms can be the source of valuable information of photographic materials and techniques which can achieve the correctness and artistic merit desirable in the product.

Both handmade and photographic slides can be prepared by teachers and pupils. Photographic slides, however, do require some special ability. Handmade slides can be made from a variety of materials, including cellophane, plain and etched glass, or plastic. Photographic slides can be produced if a camera, exposure meter, and film are available.

When the necessity for pictures in a sequence arises, the teacher may consider the production of a filmstrip. The equipment and supply requirements are the same as those for photographic slides with attention directed toward the photographing of scenes in ordered sequence. Accompanying sound may be produced through use of a tape recorder.

Lifelike and realistic 3-D pictures for use with a stereoscope also can be produced locally. This can be done with either of several types of equipment---two cameras with identical lenses, stereograph units that can be attached to certain cameras, or separate stereograph cameras with matched lenses that produce twin transparencies.

A diversity of educational outcomes is inherent in the production of a motion picture. The activities required for motion picture production---research, preparation of scenario, filing of scenes, editing---are within themselves activities which can be helpful in the development of a variety of skills. Cameras required for motion picture production are determined by the kind of finished product desired.

AUDIO MATERIALS

Any teacher who has listened to a radio or television program after school hours and has wished that her students could have heard the same program has only to realize that, with a tape recorder and a tape she could have recorded the program for use in her classroom at a time when it could have been of most value. Recordings of interviews, special sounds, drill materials for individual students or groups of students, recording of debates, reports by children for critical evaluation of themselves, are only a few of the many types of recordings a teacher can make with the tape recorder. For use in the study of language, music, dramatics, and speech, an endless number of learning experiences are possible. Additional equipment to be purchased should be determined by the proposed use of recording equipment.

THREE "CENTERS" FOR AUDIO VISUAL MATERIALS SHOULD BE AVAILABLE TO ALL TEACHERS.

The **LEARNING CENTER** is that area within the classroom in which student-teacher prepared materials are produced and/or used.

The **SERVICE CENTER** is that school or district work room in which teacher-graphic specialist prepared materials are produced.

The **MATERIALS CENTER** is that district, cooperative, regional or college source from which commercial-graphic specialist prepared materials are available.

THE LEARNING CENTER

Classroom space needs are determined by the number of occupants of the room and the diversity of the program. There must be space for formal and informal activities. Areas should be provided for individuals and small groups to work at preparation of exhibits, murals, collections, graphics and projects of all kinds. There must be tables with moisture-proof tops, sinks, storage cabinets, shelving, a wall screen, chalkboard, tackboard, map rail, and display cases. These are simply the physical properties that most classrooms must provide before an adequate instructional program can be carried on. Present day needs in education certainly have made the "two people on a log" idea an obsolete concept.

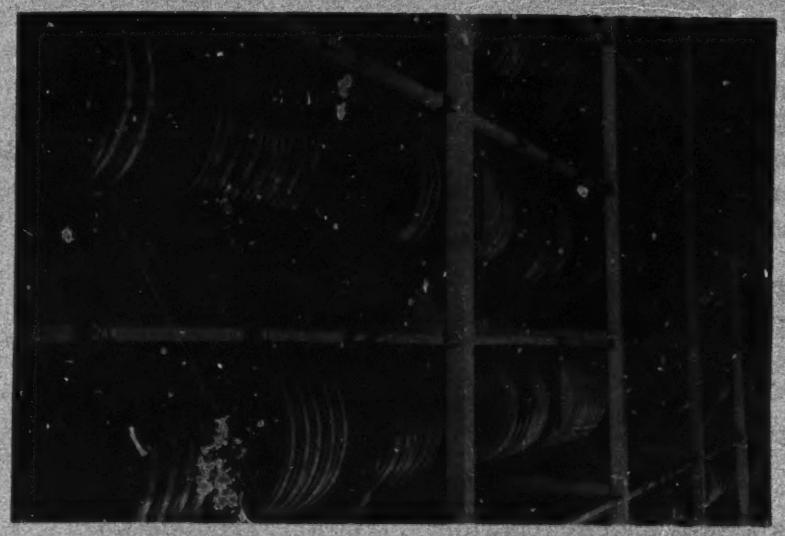
THE SERVICE CENTER

The audio-visual service center is the central location in a school, a district or a geographic region, in which instructional materials are merged with instructional plans. It is the conference area where appropriate materials are reviewed and placed in the teaching sequence being outlined in curriculum committees. It is the workshop in which bulletin board displays, sand table models, flannel board cutouts, tape recordings, slides and the like are prepared to fill in the materials gaps. It is the storeroom in which audio-visual equipment is kept and repaired. It is the control center from which equipment is scheduled and films are received and dispatched. It is the professional library in which teachers study new texts, periodicals and brochures to refine their teaching techniques. The audio-visual service center is a **CONFERENCE ROOM, WORKSHOP, STOREROOM, CONTROL CENTER and PROFESSIONAL LIBRARY.** Thought should be given to the needs of the local school situation in laying out the facilities with equipment and materials and staffing the facilities for best utilization. No matter what the local variations dictate, there should be an audio-visual workroom in each school.

INSTRUCTIONAL MATERIALS CENTERS

Where facilities are provided for central storage of audio-visual equipment and materials, there must be someone designated to be in charge. Nothing gets in the way of a smoothly functioning program as quickly as lost or misplaced equipment, materials in the wrong containers, belts or lamps missing from machines, or fogged and dirty lenses. The building coordinator in charge must keep an adequate record of location of materials and equipment in the building at all times. (Picture of sign up Board of St. Louis system could be used here). Teachers must be able to sign up for equipment easily and be assured that it will be available as requested. The person in charge must be able to make minor repairs, understand preventive maintenance and keep in stock replacements commonly needed in connection with audio-visual equipment.

There should be shelf and drawer space in each building center to accommodate film-strips, records, slides, tapes, pictures, films and the explanatory materials that accompany them. Tables and a sink should be available for use in producing and mounting inexpensive audio-visual materials. The room should be large enough to permit scheduling of film and filmstrip previewing.



Included in this area and adapted to the particular needs of the school or community which the center serves should be such equipment and facilities as:

1. Large (legal size) file cabinet drawers for flat pictures
2. Shallow side drawer space for certain maps, charts, and larger pictures
3. Special cabinets or shallow drawer space for slides and other transparencies
4. Special cabinets or shallow drawer space for filmstrips
5. Special cabinets or cupboards for records
6. Special cabinets or cupboards for tape recordings
7. Special cabinets or cupboards for motion picture films
8. Special shelving for books and pamphlets
9. Sturdy tables with tools for opening and wrapping parcels. Such tables should provide recessed storage--cabinet space below
10. Out-of-the-way but conveniently located storage for such things as shipping cases, reels, and cans
11. Sturdy tables or table (with nonmetallic tops) for inspecting, cleaning, repairing, and preparing for shipment or pickup, of all materials. Such tables should provide recessed storage--cabinet space below.
12. Adequate lighting without glare, including well shaded lights over work tables in area
13. Convenient electrical outlets

14. Good ventilation, including special fans and ducts for removing fumes during film-cleaning operations

15. Thermostatically controlled temperature with controlled humidity

16. Out-of-the-way but conveniently located storage for special tools, hardware, glues, and cleaner fluid needed in repair of materials

17. Nonsplash sink with quiet faucets

18. First-aid material for minor cuts

19. Package trucks and/or carts for moving heavy packages

20. Sturdy, lightweight stepladder

21. Compact "visual" cardfile

22. Tackboard space on wall side of cabinets or shelving

Such a list indicates the basic requirements of a small system-wide or of a large individual school building center. For any one system or school such a list should be viewed as a reference or checklist to be adapted to local needs and available building spaces.

A functional differentiation between what should be in a building service center and what should be in a district service center is this: Those things which are too expensive or too seldom used to warrant equipping in each school building should be relegated to a central center for the district. Those districts which are spread out over large geographic areas will find that a district center will not be used or useful because of the inconvenience in location. In these cases such a center should be staffed to do specialty work for teachers in outlying schools as requested. If there is a close proximity between schools of the district, a central service center will be more economical than equipping individual school centers with materials and equipment beyond the normal daily routine needs.

THE MATERIALS CENTER

MATERIALS CENTERS are basically film libraries or instructional materials centers which serve large metropolitan districts, state college districts or other geographical areas. Film libraries frequently have other materials (filmstrips, records, tape recordings, study prints, specimen models, dioramas) for distribution to a certain clientele. These centers exist because their services can be rendered best by having such monopolies.

In Missouri there are four basic organizational plans for **MATERIALS CENTERS:**

1. The **LARGE SCHOOL DISTRICT MATERIALS CENTER**... Many school districts of Missouri have reached a school district size, student population, and assessed valuation, etc...to make a self-owned materials center economically feasible. Although materials centers require a relatively large capital investment to offer a significant service, these districts having their own centers find that a greater use of audio-visual materials is gained. Teachers select materials or limit themselves on the basis of educational value rather than on film rental allowance and limitations. During the school year 1960-61 Missouri teachers served by such centers used over 130,000 films. School districts operating such centers determine what services and materials they will offer. They staff the centers with necessary supervisory and clerical staff, operate delivery trucks to serve the schools on regular routes, and budget for expansion and maintenance of the materials offered.

2. The **COOPERATIVE MATERIALS CENTER**...Many districts, finding that they are not (and perhaps will not be) able to maintain their own materials centers, join together in cooperative effort. In areas where the geographical separation of schools in several districts is not too great; where the collective financial burden of operating such a center is not too great; where the curricular offerings are nearly alike; where the desire to work together overshadows district boundary lines;...these are the areas in which such cooperative materials centers operate. One of the largest cooperatives in Missouri shares the cost by using a formula based on average daily attendance and assessed valuation of each cooperating district. This distributes the financial burden according to the students served and the ability to pay for this service. A committee, representing the cooperating districts, assumes the direction and administration of such a cooperative through an administrator it employs for this purpose.

3. The **STATE COLLEGE DISTRICT MATERIALS CENTER**... Each of the state colleges of Missouri operates a materials center, primarily for on-campus use in college classes and for the training of teachers in the selection and use of audio-visual materials. A second responsibility of these centers is that of serving the schools and community organizations of their college districts.

These "Regional" centers are usually financed by the State of Missouri through their college budgets. This financing includes the cost of facilities, equipment and personnel. The cost of servicing schools and community groups is covered by rental fees charged by the center on a per-use basis.

Schools using the state college district materials centers pay as they use. Realistic school budgets include amounts for materials-rentals.

4. The **STATE UNIVERSITY MATERIALS CENTER**...Although financed and operated much like the state college regional centers, the state university provides state-wide service. All schools in Missouri may rent materials from this center. Many schools use the university's film library as a prime source for materials. Others, served by local cooperatives, district libraries and/or state college libraries, turn to the university materials center as a secondary source when their usual source is unable to fill certain requests.

Every school in Missouri is served by one or more of the above materials centers operated by public educational institutions. Private film libraries, libraries run by other state or local governmental units and out of state film libraries also serve Missouri Public Schools.

AUDIO VISUAL EDUCATION

Teacher Suggestions for Revision

Chapter Six

Planning Schools for Use of Audio-Visual Instructional Materials

It is very likely that no area of a new school building will have as many varied and changing demands placed upon it than the "basic" classroom . . . . . .

Planning Schools for Use of Audio-Visual Instructional Materials

IT IS VERY LIKELY THAT NO AREA OF A NEW SCHOOL BUILDING WILL HAVE AS MANY VARIED AND CHANGING DEMANDS PLACED UPON IT IN THE NEXT FIVE TO TEN YEARS AS WILL THE "BASIC" CLASSROOM. No other single area of new buildings receives so little detailed attention from planners or is so poorly adapted in general to changing times in education. Teachers and children should not be forced to leave the normal classroom environment in order to use instructional materials, or television programs, as is the case in too many "modern" buildings. The classroom is the natural learning environment; it has the chalkboard for listing questions to which the students should seek answers in the film, the maps that students may wish to observe before the film or during the discussion afterwards and the class projects related to the subject being studied.

It costs less to darken each classroom and provide the needed equipment than it does to construct a projection room. For less money the students are given more effective use of materials in their own classrooms.

Audio-visual class projection rooms are discouraged for sound educational reason: when a group moves out of its classroom to the auditorium or the projection room a holiday atmosphere tends to develop.

For economy and convenience, provisions for the use of audio-visual materials should be made when new schools are designed and should not be neglected when older schools are remodeled. It must be remembered always that school plants are constructed not for today alone but for a generation of use.

Numerous examples can be cited where after new buildings have been completed it has been discovered that construction has been such that structural steel beams or glass blocks were placed at points where drapery tracks or shade brackets should be mounted, thus making light control installations unnecessarily costly. New bi-laterally lighted buildings have been built where no method of adequate light control was provided and projection equipment has proved useless.

Classroom needs are not adequately met when a teacher must devise, at the expense of time needed for pupil guidance, makeshift means of using modern instructional materials effectively. Conditions in the room should be such that the learner can hear appropriate sounds without distraction, can see projected pictures without strain, and can participate comfortably in any classroom activity which will favor desired learning results.

PROVIDING FOR PROJECTED VISUALS

In many school buildings the large glass areas make both light and heat difficult and expensive to control. All classroom glass wall areas need opaque coverings to exclude the light so that projected instructional materials can be used effectively. With the advances in artificial lighting we are not dependent on natural light for classroom activities -- and artificial light is more easily controlled. It is difficult to control glare and shadows from sunlight. Except in cool weather, rooms with a southern or western exposure become too hot, resulting in fatigue and restlessness.

CONTROLLING LIGHT

Control of light in every classroom and laboratory is essential for physical comfort, the preservation of eyesight and for a good learning environment. At least twenty foot-candles of shadow-free and glare free light must be maintained for reading and work areas. Only one-tenth of one foot-candle should fall on a projection screen according to the Committee on Non-Theatrical Equipment of the Society of Motion Picture and Television Engineers. No ordinary shades, drapes or blinds can exclude natural light sufficiently. The committee states:

"Good tonal quality in the projected picture is impossible if the room in which it is being viewed is not adequately darkened. Studies have indicated that a general room light in the order of one-tenth foot-candle is not harmful. This is a level of illumination under which it is a difficult but not impossible to read ordinary newspaper type.

Aside from making provisions for excluding light from the room until the general level of illumination is at least as low as indicated above, it is particularly necessary to make sure that no narrow beams of light, especially sunlight, enter the room to produce bright spots on walls near screens, or to strike other objects in the room from which dazzling reflections will be thrown. For the comfort of the students, the screen should be the brightest object in the room.

Light which comes into the classroom through door windows, open display areas and glassed areas between classrooms and corridors also needs control.

With some projected visuals, particularly slides and overhead transparencies with line drawings, up to one foot-candle can be directed downward on desks for note taking but this amount of light should not fall on the screen.

In today's schools it is customary for groups within a single class to work on different projects and to carry on different activities at the same time. Therefore at least four switches should control the artificial light sources in the classroom, each regulating one-fourth of the classroom. With such an arrangement one corner can be darkened partially for a group wishing to project a filmstrip or the front can be lighted for a play. The sides opposite the windows can supplement natural light or a back corner can be lighted when more brilliant line drawings are projected on the screen at the front of the room.

EXCLUDING NATURAL LIGHT

Three methods are commonly used to exclude natural light sufficiently to permit good projection:

1. Full-closure, Venetian blinds with light shields
2. Opaque drapes of fireproof fabric or plastic materials
3. Opaque shades

Full closure blinds, using channel light shields at the top and on the sides, give both diffused lighting and sufficient darkening for projection.

Opaque drapes for darkening may require also translucent drapes, shades or regular Venetian blinds to give desirable diffused natural light and protection from glare.

Opaque shades frequently are used in older buildings with individually spaced windows. Opaque shades need channels or flaps to be effective. In addition, translucent shades are required for diffused lighting.

Light control devices also are needed for clerestory lighting and for glassed areas sometimes placed between classrooms and corridors. Skylights must be provided with light control devices for the use of audio-visual materials. Skylights have been found to be impractical for audio-visual instruction since they are difficult and unduly expensive to darken.

VENTILATION

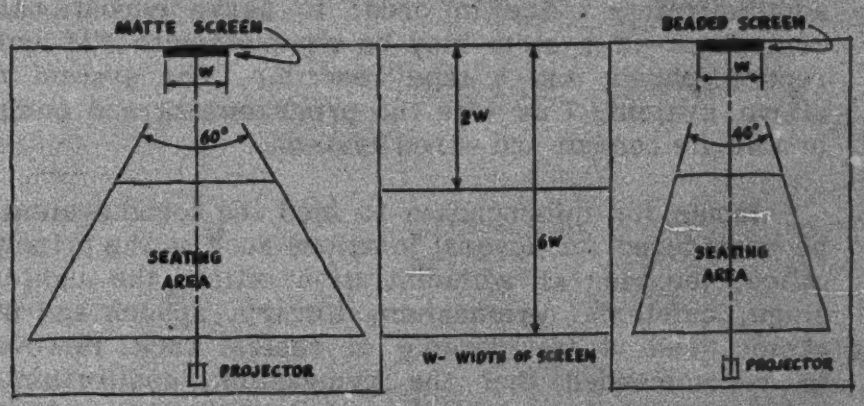
Ventilation is a serious problem that accompanies classroom light control. Natural ventilation blows drapes to some extent and particularly shades, admitting excess light. Full-closure

blinds may not admit sufficient air with the classroom door closed. Mechanical ventilation is recommended.

SELECTION AND PLACEMENT OF PROJECTION SCREENS

Adequate, well-placed, wall mounted, projection screens are needed in each classroom. Matte surfaces should be used for wide or nearly square rooms as they have a wider angle of reflection. Beaded surfaces are recommended for use in long, rectangular rooms as they reflect more light at a narrower angle. Metalized surfaces are effective for the rarely used three-dimensional viewing, such as used in solid geometry. Students should not sit nearer than 2 times the width of the picture projected or farther away from it than 6 times its width.

Roller mounted 70" x 70" screens should be hung permanently at the center front of the classroom. Projection screens need to be hung from a display or hook rail considerably above the top border of the chalkboard. The bottom of the screen should be at eye level as the students sit at their desks in order that students at the rear of the group may have an unobstructed view of the picture screened. Table or stand supported projectors should be high enough for the light path to pass over the students' heads.



Screens to be used with overhead projectors should be suspended out from the wall about 18 inches on brackets. By fastening the bottom of the screen to the wall, the surface of the screen is slanted to avoid the "keystone" distortion effect, usual with overhead projectors, caused by the tilting of a projector near the screen.

For decades educators have been promised screens that could be used in rooms not having light control facilities. Improvements have been made but the goal seems far from being reached. Portable shadow boxes are useful for small group or individual student use but they are far too bulky when approaching the size desirable for an entire class. Built-in shadow boxes are usually much smaller than the 70 inches x 70 inches recommended for screens to be used with opaque and overhead projectors. Rear screen projection for general classroom use has proven unsatisfactory for many years although it is useful for limited space exhibits and in television production.

The newest developments, refracting and lenticular surfaces, give a much better picture than standard screens in a lighted room but they are smaller and sometimes require an inflexible frame making them much less convenient to use.

There is not yet an adequate substitute for darkening classrooms so that no more than one-tenth foot-candle of light falls on a large screen.

CENTRAL SOUND SYSTEM

A central sound system is recommended for all schools. Sound system speakers should cover the entire building and campus including classrooms, corridors, bus loading areas, playgrounds, gymnasiums, cafeterias, and auditorium.

Discriminate use of this administrative aid will insure that it does not become a teacher annoyance or a frequent interruption of the learning situation. The following are some of the educational uses of the central sound system:

1. By administrators for announcing curricular and extracurricular activities, new regulations or disciplinary action, changes in schedule and directions on playgrounds, at bus loading depots, or in emergencies.

2. By students, for morning student newscast, school activity announcements and reports, student government activities and student musical programs before school, at dismissal, and noon broadcasts (both live and recorded); radio events of national and world importance.

The system should be equipped with quality speakers to attain the highest possible level of performance. It is suggested that the classroom speaker be mounted at a height of 8 feet.

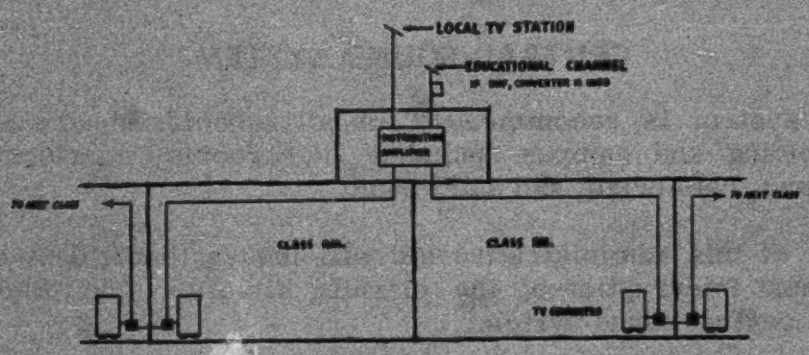
The console control, or central control rack, should be placed in a room off the central administrative office in order to serve educational as well as administrative purposes. The central sound system may be equipped with FM and AM radio tuners, a four-speed automatic record player and a tape recorder. The system may include facilities for a secondary fire alarm system. This with the programming and communication facilities can be all integrated in a single conduit and wired system.

Inputs for microphones to feed the sound system may be considered for several locations such as the principal's office, the central administrative office, the auditorium stage, cafeteria, gymnasium, library, speech and music rooms, and at the console or central rack. However, it is recommended that the gymnasium, auditorium and cafeteria have their own independent public address systems. This system might be permanent or a portable system, moved when necessary. The speaker in these rooms should be permanently mounted with a convenient wall plug to attach to the amplifier if a portable system is used.

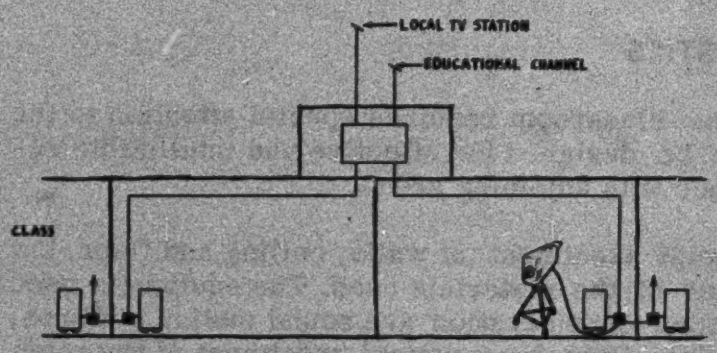
Inexpensive telephone head sets may be added to a central sound system and are highly recommended for two-way communication between classrooms and the administrative office. These telephones, when used by the teacher automatically disconnect the room speaker and provide privacy of conversation between the principal and the teacher without disrupting the concentration of the class.

EDUCATIONAL TELEVISION

Careful consideration should be given to use of television in schools. Many teachers are utilizing commercial and educational television in the classroom. Schools are making progress also with closed-circuit television on all levels and in all subject areas to up-date the quality of local instruction. School planning should provide the necessary conduit so that the following steps in developing educational television utilization can be carried out.



Basic to school use of television is a meter antennae system. Wires, run through conduit from the antenna to all class and special rooms, constitute such a system. The television signals from the antenna on the roof are amplified and fed through these wires (coaxial cables) to all rooms in the school building.



Some antenna systems on the market can be used to distribute closed-circuit television programs. A school district needs only to purchase a television camera and its associated controls and it will be possible to originate programs in any classroom to be viewed in other rooms of the same building. Closed-circuit programs may be carried to other school buildings near by with the use of connecting cables or thru the air transmitting facilities.

Educational television is recommended for use in the classroom, rather than the auditorium or a special room. Two 24 inch picture tube sets are recommended for each normal-sized classroom. The viewing angle is as least as good as for matte screens. A maximum angle of 35 degrees from either side of center is satisfactory. The minimum distance from television picture tube to the viewer is about 5 times the width of the "screen" and the maximum recommended distance is ten times the "screen" width. This would amount to seating students no nearer than 10 feet or farther than 24 feet from the 24-inch picture tubes suggested above, allowing each set to serve 12 to 15 students.

ELECTRICAL ENERGY

Just as in the home, the classroom needs more electrical energy and more outlets than in past years. The Department of Audio-Visual Instruction of the NEA recommends 20 amperes for each classroom. Lines should provide at least 110 volts under full load.

The wattage of projector lamps has been stepped up from 150 to 1,200 watts in the past 15 years -- and many more pieces of equipment now are used more frequently. In many older buildings teachers cannot use projectors in adjoining rooms at the same time without blowing a fuse. Circuit breaker systems are preferred over common plug fusing.

Double outlets should be placed on all four sides of the classroom and should be placed above work counters where these are installed. The outlets should be on a separate circuit from the room lighting.

ACOUSTICS

The abundant use of audio materials in the classroom requires special attention to the acoustical properties of the room. They must be designed for effective and intelligible reproduction of sound in one room without interference with adjoining areas.

Acoustics is concerned not only with special treatment of walls, ceiling and floor, but with the sound-transmitting or producing qualities of the materials used. The equipment used in the classroom which requires special acoustical consideration are sound motion pictures, recordings, radio, television, and sound filmstrips. Proper acoustical treatment of the room can do much to improve the effectiveness of teaching.

PROVIDING STORAGE

Provision should be made for storage rooms opening off supervised areas such as the central administrative office (or office of the immediate area), library or the building audio-visual coordinator's office. Special rooms from which equipment and materials are circulated should be conveniently located. The following alternative arrangements are suggested.

-On each floor of the building

-In each building unit of campus type schools

-By departments in some secondary schools

-In a central area

Equipment storage rooms should have good tumbler locks. All thresholds in the building should be flush with the floor to facilitate the movement of instructional equipment mounted on the rolling projection stands.

Audio-visual materials also should be stored and filed so that teachers may have easy access to them. The teacher will keep some of these in her own room if she uses them frequently. Materials for general use may be filed in the library, by departments in secondary schools, off the general or area office, or in connection with the audio-visual coordinator's office.

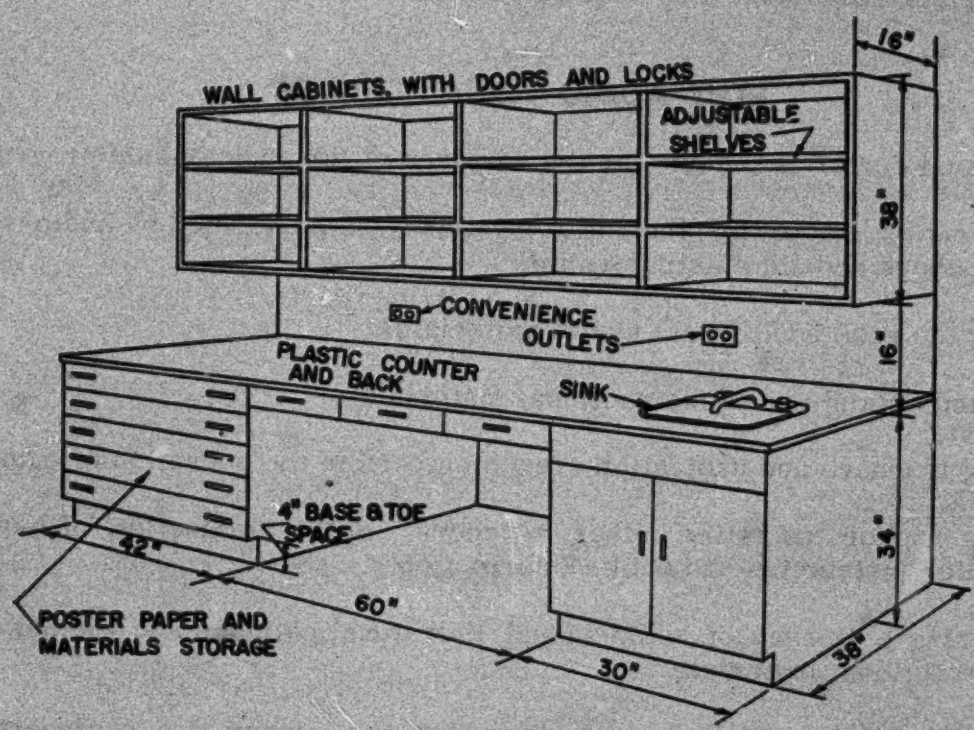
STORAGE WITHIN CLASSROOMS

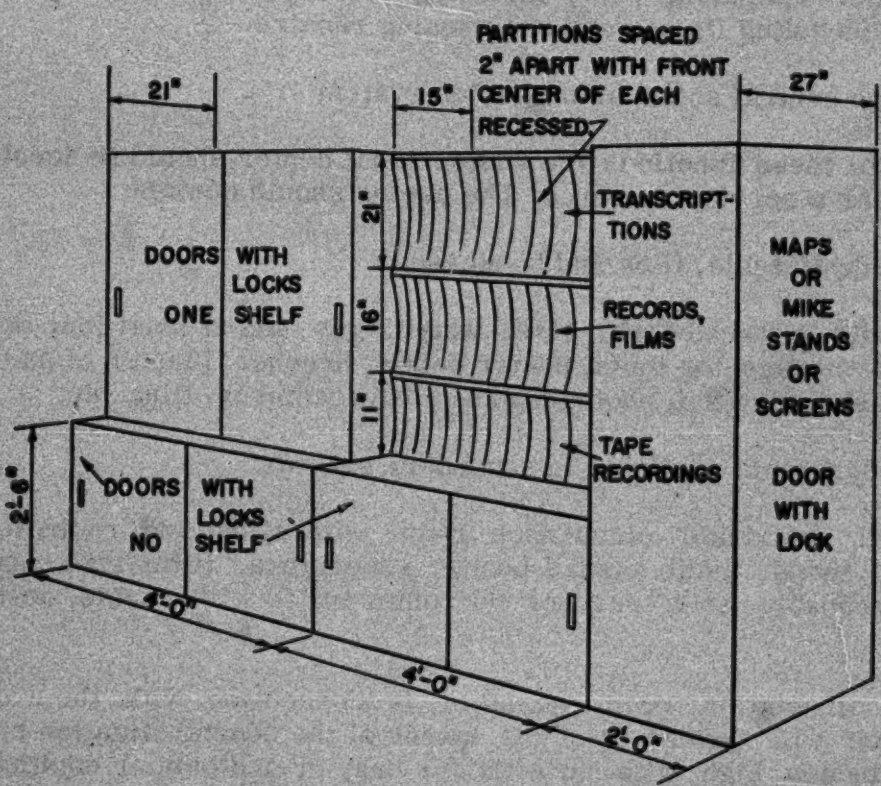
Some equipment assigned to rooms will need storage there. The amount so assigned is steadily increasing as teachers make more frequent use of it. Each room should be supplied with a minimum of:

1. A legal-size file cabinet

2. A cabinet with wide deep drawers for pictures, posters and charts up to 36 by 40 inches

3. A cupboard with assorted height shelves for miscellaneous supplies.





"STORAGE IN THE CLASSROOM"

PLANNING FOR USE OF AUDIO-VISUAL MATERIALS IN SPECIAL ROOMS

Although the best use of audio-visual instructional materials is usually in the regular classroom these materials have uses that require particular attention in certain other rooms in the school.

THE AUDIO-VISUAL CENTER

The audio-visual center is the hub for the services of the audio-visual program.

It is the operation center for the following functions performed by audio-visual personnel when assisting teachers and administrators in:

1. Promoting the good educational use of materials
2. Locating and obtaining new instructional materials
3. Instructing teachers and projection crew members in the operation of equipment
4. Producing and/or assisting other teachers in the production of local audio-visual materials for instruction and public information
5. Administering a library of audio-visual literature, catalogs and various types of audio-visual instructional materials
6. Administering the equipment pool, including the supervision of departmental or area "substations," scheduling its use and supervising repairs
7. Administering the central sound or television system

In order to expedite these functions the audio-visual center should be located conveniently for the teachers, and near a service entrance. The center should contain:

1. An office with a desk, table, files and bookcase
2. A workroom with a workbench, vise, water, gas and at least four double outlets for electricity; with storage for tools, poster paints, brushes, plaster of paris, construction paper, poster board, plywood, photographic lights, cameras, film, etc.
3. A photographic darkroom available in secondary schools
4. An instructional materials circulation room with tiles and racks for films, slides, transparencies, maps, audio-visual books, recordings, filmstrips, and professional literature -- probably as a part of the outer office with a table, desk and files for a secretary.
5. An equipment circulation room possibly in connection with the workroom (2). The amount of space will depend upon the extent of the decentralization but lower shelves should be 30 inches high with no sills for heavier and bulkier equipment; and others spaced 18 inches and less. (See table 1, page 20, for assistance in estimating the total amount of storage space needed.)
6. The school television studio, control room, boom microphones, television cameras, a projection chain and space for property storage
7. A small studio and audio workroom, duplicating audio materials

8. An adequate previewing and auditioning room

Item 7 may not be necessary if these services are available from a district wide service to all schools.

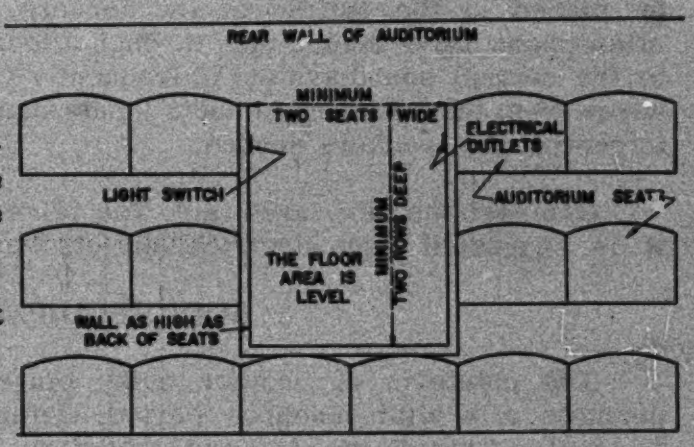
AUDIO-VISUAL EQUIPMENT IN THE AUDITORIUM

There are some occasions when large groups may be shown audio-visual materials in the auditorium.

Darkening problems are easily handled in most new auditoriums by omitting all windows and employing mechanical ventilation. Where windows do exist they should be covered by opaque, fireproof, fabric or plastic drapes. They should overlap at least one foot, hang well below the windows, and be covered at the top by a wooden valance.

Screens should have a beaded surface for narrow rectangular auditoriums and a matte surface for wide square-shaped areas. The screen should be hung so that students in the front row should not be seated nearer than 2 times the width of the screen. It should be large enough that no student will be seated farther from the screen than 6 times its width. A square-shaped screen is desirable but this factor should not limit the width necessary to meet the needs of the students in the back of the room. Auditorium ceilings and proscenium arches should be high enough to accommodate an adequate screen.

Large auditoriums should have projection booths; smaller ones should have a projection alcove or niche at the back of the auditorium on a modest elevation, approached by a ramp to accommodate rolling projection stands. A projection area can be provided in the place of four or more seats at the center rear of the auditorium.



Electrical Energy and Controls

Double electrical outlets for audio-visual equipment, fed by multiple circuits independent of the house lights and fused for 30 amperes, should be placed:

1. Every four feet along the base at the front of the stage
2. At least two in each wing of the stage
3. Two at the back of the auditorium and one in the floor halfway back, or one one-third and one two-thirds of the way back in larger auditoriums
4. Four in the projection booth or two in projection niche or alcove

One wing of the stage should have an enclosed booth or cage in which should be housed controls for the central sound or television system, public address, and recording equipment and perhaps a set of controls for the curtain, screen and lights. All these controls should be at least in the same wing. Controls for many of these items also should be considered for the projection booth and to a lesser degree for the projection alcove. At the minimum one set of auditorium lights should be under the control of either the booth or the alcove, whichever is used. There also should be telephone or intercom communication between these points and the stage control center.

Auditorium Sound

Careful attention should be given to the many acoustical problems in auditoriums. High-

fidelity speakers should have permanent installation. They should be wired with inputs so that they may be fed by the central sound system, public address, motion picture projector, record player and tape recorder player without stringing long connecting cords. The power outlets at the front (center), back and intermediate points in the auditorium, and in the booth or alcove, should have placed beside them inputs for sound from audio equipment, with speaker cables leading to an amplifier and thence to the permanent speakers.

Permanent shielded microphone cables for low-impedence microphones should be installed every 10 feet across the front of the stage; one in the back center, and provision for one to be lowered to the center of the stage. Similar microphone inputs should be installed at the center front and the center back of the auditorium proper, and half-way or one-third and two-thirds the way down all the aisles for audience participation. All inputs for microphones should lead to the auditorium public address system and thence to the permanent speakers.

Conduits could be installed to permit the origination of closed-circuit television from the stage. With this facility, assembly programs may be carried to all the students in the school, even though the auditorium will not seat them.

AUDIO EQUIPMENT IN THE GYMNASIUM

Gymnasiums, with their usual hard walls, floors and ceilings, reflect much of the loud noise created there. Because of the reverberation it is very difficult to understand commands and the calls for square dancing and other activities. Therefore considerable acoustical treatment is necessary.

In order to give a more even distribution of music and speech several speakers should be placed in the ceiling or the corners. The local transcription player with tempo control and microphone input should play through a local amplifier to these speakers. A special line installed to the central sound system is frequently valuable. In divided gymnasiums, permanently installed wires from the speakers to audio inputs should be provided in both parts of the room with switches to control the speakers needed.

Gymnasiums are used also for fairs, exhibits, bazaars and social activities and therefore it is suggested that electrical outlets be installed about 20 feet apart on all sides of the room.

AUDIO EQUIPMENT IN THE CAFETERIA

The cafeteria is another noisy place and needs considerable acoustical treatment to help promote a restful luncheon period. Cafeterias are used for banquets, PTA meetings, overflow from the auditorium etc. and therefore need a good speaker system. Several properly placed speakers are suggested. There should be a microphone input for the central sound system at each end of larger cafeterias, or an audio input so that a local amplifier with microphone can use the permanent speakers. Light control and power outlets also will be necessary.

AUDIO EQUIPMENT IN MUSIC ROOMS

The problem of acoustics in the music room is not that of "deadening" the sound(reducing the reverberation) as in the cafeteria and gymnasium, but rather affecting its natural rendition. Some music rooms are constructed in trapezoidal shape with no walls parallel. Excellent well-baffled high fidelity speakers are essential, the number depending upon the size of the room. The high-fidelity music room transcription player and tape recorder also should play through these permanent superior speakers as well as the central sound system. Several microphone inputs with mixing facilities should be located across the front of the room. The output of these should feed into a tape recorder.

Opaque drapes assist in controlling acoustics and controlling light.

AUDIO-VISUAL EQUIPMENT IN SPEECH ROOMS

Acoustical treatment is again in order. Multiple microphone inputs should be placed across the front of the stage and one located at the back of the room. These inputs should lead to a mixer and then to the local tape recorder and the central sound system. Darkening facilities as recommended for other classrooms are needed.

AUDIO-VISUAL EQUIPMENT IN FOREIGN LANGUAGE ROOMS

As in music and speech, foreign language instructors require accurate reproduction of sound and therefore, above average acoustical treatment. These classes also will demand more use of tape recorders, and frequently record players synchronized with strip and slide projectors, which probably would justify the direct assignment of such equipment to the room.

FOREIGN LANGUAGE LABORATORY

Basically, a language laboratory is a large room in which rows of relatively soundproof stations or booths have been installed. Students listen and repeat aloud the recorded language being studied. The size of the laboratory is dependent upon the number of stations to be installed. Large laboratories have the advantage of handling more than one language class in the same scheduled hour.

LOCATION OF LANGUAGE LABORATORY

In order to minimize the level of background noise in the laboratory, it must be located away from outside noise such as street traffic and athletic playgrounds, and from inside noise such as the gymnasium, music rooms, vocational areas, and hall with heavy student traffic. All foreign language labs, practice rooms and classrooms should be grouped for quick passage to and from classroom and laboratory by students.

Architectural consideration must be kept in mind also to determine that: The space provided is large enough for the desired installation; provision has been made for related facilities, and the expansion of space and facilities; wiring and wiring facilities have been checked for adequate power and safety for the laboratory. An electrical inspector should be consulted and local wiring code observed. The room provided should be treated for sound if the ambient noise level interfers with instruction. The following should be checked: door, ceilings, windows, walls, hard surfaces, overhead light, ventilating and heating systems.

Teacher Suggestions for Revision

Chapter Seven

Utilization of Audio-Visual Instructional Materials

A teacher can make effective use of audio-visual instructional materials only when thoroughly familiar with the materials to be used . . . . . .

Utilization of Audio-Visual Instructional Materials

A TEACHER CAN MAKE EFFECTIVE USE OF AUDIO-VISUAL INSTRUCTIONAL MATERIALS ONLY WHEN THOROUGHLY FAMILIAR WITH THE MATERIALS TO BE USED. Each time a teacher views audio-visual instructional materials she sees something new, gains fresh insight and observes details she overlooked previously.

A teacher should plan how to introduce the audio-visual instructional material, know how it will fit into the teaching-learning situation, be ready to anticipate necessary interpretations of the material, and plan the follow-up study or discussion. It is necessary that the teacher examine or preview carefully all audio-visual instructional materials before using them.

Although tight schedules and heavy extracurricular responsibilities of so many of our teachers often make it difficult for the teacher to preview teaching materials, it is essential that she find the time. Otherwise, she cannot use them with maximum effectiveness.

A set of transparencies, a motion picture, a filmstrip, a television program or a recording may be used to initiate, to develop or to help in organizing and summarizing the learnings of a unit. They may be used to start discussion and stimulate the pupils to explore and learn more about the subject. A set of posters or a set of slides may be a resource to provide basic information, to clarify and make more concrete hazy impressions and understandings derived from written material. They may bring out new attitudes and appreciations.

Audio-visual materials may be used profitable in any phase of the teaching-learning situation where they fit as an integral part of the process. They play a basic role in the process along with printed material and class discussion.

Some Basic Principles of Good Utilization

Class and individual needs and interests will determine the purposes for using a particular material. Some audio-visual instructional materials will stimulate interest in a new area of study; others will help the class organize, review, or summarize subject matter.

All those participating in the lesson should understand clearly what the objectives are and how they relate to the broader learning goals.

Lesson Planning

A good lesson with audio-visual instructional materials has all the ingredients of any good lesson:

A. Clearly defined purposes

B. Well-selected audio-visual instructional materials which give the subject matter clarity and reality

C. A lesson plan which moves logically from point to point

D. An interesting presentation

E. Follow-up activities which strengthen and extend the learning

F. Testing for clarity of understanding

G. Continuing evaluation of learning

In planning the lesson, the teacher must begin by becoming familiar with the content of available audio-visual instructional materials.

Selection

Select audio-visual instructional materials which come as close as possible to meeting class-teacher purposes, needs and interests. Judge the "rightness" of the audio-visual instructional materials by a few simple standards. Is it well-organized? Interesting? Factually correct? Up-to-date? Is it of good production quality? Are pictures clear and sharp? Are content and manner in which it is presented suitable for the age level and experience of the group who will use it?

Presenting the Lesson

Before using audio-visual instructional material, introduce it to the class. Tell them about the "title," the "place," the "time," and the "people."

Encourage pupils to do more than collect facts. Stimulate them to think about the meaning of the information presented, to be aware of problems stated or implied, to be alert to new ideas, and to recognize some of the intangibles inherent in the content.

The class and teacher will have some questions which they hope the audio-visual material will answer so these are put on the chalkboard. As the material is being used, the class watches for answers.

When preparing the lesson, the teacher should note those sections of the audio-visual material which contain information of special significance to the group. These should be studied by the group in greater detail.

After the audio-visual material has been used in a class, its contribution to the subject under study should be discussed. Did it provide answers to our questions? Did it give an honest picture, or was the information incomplete or biased?

If all the questions were not answered, or if new ones have arisen, the part in question, or the entire material, can be used again.

Testing

Teachers test pupils in many ways. Some pupils respond best to written tests; others to oral testing. After studying audio-visual material that shows how to perform a skill, the most effective way to test for accuracy is to give the class an opportunity to practice the skill. Both discussion and dramatization are useful ways to test for accuracy in learning. Thoughtful observation of pupils rewards the teacher with many clues to the evaluation of the learning that is taking place.

Test results support the statement that **Teaching With Audio-Visual Instructional Materials** can: create interest, clarify content, speed learning, increase retention, and facilitate teaching.

Follow-Up Activities

A lesson that is "right" for the class, on which has been lively and satisfying, can stimulate many kinds of follow-up activities. The group initiates some; others, the teacher plans. Collecting specimens or objects, reading, making maps or graphs, writing stories, letters, poems and songs are some activities which can follow the use of audio-visual instructional materials.

Some pupils enjoy working on individual self-directed projects and should be encouraged to exercise ingenuity and creative ability.

APPLICATION TO CURRICULAR AREAS

All types of audio-visual instructional materials may be used in any curriculum area and can contribute to learning at all age levels. It is the job of the teacher to understand fully the advantages and limitations of each type of audio-visual material.

If scheduling permits a teacher to spend all or the major part of the school day in the same room, he should assume the responsibility to create in his room an appropriate laboratory atmosphere. This is achieved in part by displaying posters, maps, charts, pictures, specimens, products of other lands, and other materials relating to the subject area and to the units currently being studied.

Pictures displayed on the walls or projected will help many students to achieve understandings and resultant attitudes and appreciations impossible to acquire through any other medium.

Examples of socially desirable behavior, presented through motion pictures, may cause pupils to identify themselves with the characters portrayed. They may be led more easily to discover for themselves the need to eliminate undesirable attitudes and cultivate desirable habits.

The occasional use of dramatization can clarify concepts effectively.

A skillfully and attractively arranged bulletin board, prepared by student committees, may be a strong motivating force.

A panel discussion recorded on magnetic tape may be used later for class evaluation or for presentation to another class.

A set of slides may be used to present an illustrated report of a trip, a detailed program, or to record salient features of a dramatization.

Field trips offer rich learning experiences. Some may be planned to study a phase of local government, to gain first hand impressions of a place of historical significance, or to acquire specific cultural values. Others provide opportunities to observe the application of scientific principles in industry or to see how people actually work in some particular occupation.

SOCIAL STUDIES

A variety of authentic and up-to-date maps, globes, charts, slides, and graphs appropriate to the areas being studied are essential in the social studies.

Filmstrips and photographs of people, homes, public buildings, churches and activities of other lands, will make the pages of the textbooks come to life and help the students understand that they are studying about real people who actually are similar to themselves in their basic needs and interests.

The use of recordings can bring to life the past, as in the "I Can Hear It Now" transcriptions. A tape recorder may make a record of actual events that take place outside of school hours. The great speeches and news events of our times furnish significant teaching material for students. Recorded versions of audio portions of radio and television programs make valuable listening in the classroom. Social studies tests can be put on tape to good advantage. Brief recordings of class committee activities can keep the other committees informed. Local history and lore may be recorded and saved on magnetic tape. Historical events may be dramatized on tape recordings. Scripts can be written by class members.

UTILIZATION OF AUDIO-VISUAL INSTRUCTIONAL MATERIALS

A variety of sound motion pictures and slidefilms is available to help initiate, develop, illustrate, and review units in most areas of the social studies.

Posters, pictures, workbooks, and a great variety of inexpensive social studies teaching materials are available from innumerable sources.

Field trips to civic centers and historical points increase interest in social studies. Recorded interviews with civic leaders and other persons provide discussion topics for the social studies.

ENGLISH

Motion pictures and transcriptions of literary masterpieces may be used to develop appreciations and to stimulate greater understanding of the literature program.

Filmstrips and slides can help teach grammatical usage effectively.

Intricate and detailed designs of costumes, scenery, architecture, impossible to convey through the printed word alone, may be presented through filmstrips, slides, transparencies, or other still pictures.

Photographs are useful in helping to interpret stories or visualize concretely the subject matter of poetry.

Recordings, television, radio, and motion pictures may be employed to encourage a desire for correct pronunciation, careful enunciation, and effective expression.

SCIENCE

A wide variety of audio-visual instructional material is available and should be utilized to present or clarify concepts that are less readily acquired by other means.

The actual steps in a scientific process, studied in a textbook, may be demonstrated through motion pictures, filmstrips, slides, photographs, overhead transparencies and overlays, and television.

Models may be used to demonstrate clearly how organs are constructed, or how engines function, since students may actually handle the models and put the parts together to see how they fit.

Exhibits at all levels (science fairs, regional fairs, class exhibits), create interest, provide the incentive for extensive research and the development of many skills, and may help to identify students of unusual promise.

Slides, filmstrips, opaque and transparent projections are effective in the presentation of difficult concepts, for they permit extended discussion of each phase of the process or problem being studied.

Motion pictures provide an opportunity to observe the application of science to industry and in the daily lives of the pupils, thereby motivating the science study.

Graphs and charts are effective in presenting in a clear, easily comprehended whole many complicated phases of the work. They seem to be imperative in the study of human physiology and the structure of plants and animals.

FOREIGN LANGUAGE

Coins, pictures, art objects, postage stamps, and other objects brought from foreign lands may be used to help interpret the culture of these lands and also as an aid in vocabulary building.

Motion pictures may be used to explain, better than through any other agency, the way people of other lands live. Foreign language motion pictures are invaluable instructional materials in teaching correct pronunciation, enunciation, intonation, and speech patterns.

Magnetic tape recordings of foreign language fables, songs, and conversations will help pupils to acquire correct accent and good pronunciation habits.

Slides, photographs, filmstrips, and motion pictures may be used as a basis for the discussion of the customs and achievements, and the likenesses and differences of the nation whose language is being studied.

MATHEMATICS

Each class in algebra and in general mathematics should have available chalkboard compasses, protractors, and straight-edges for demonstration and for student chalkboard practice. A variety of other apparatus also may prove helpful: adjustable triangles and quadrilareals, cones, and other solids. A large demonstration slide rule facilitates the teaching of the slide rule.

Motion pictures are helpful in introducing mathematical concepts and in demonstrating the usefulness of mathematical skills and processes.

A wall graph board, designed for use with either chalk or crayons, is invaluable in teaching algebra and in general mathematics.

Overhead projection equipment and prepared overhead transparencies and overlays are especially useful in mathematics teaching.

Home economics and science laboratory equipment may be borrowed to demonstrate concrete applications of measurement.

Charts and graphs -- bar, broken lines, pictorial, circle -- may be secured from a variety of sources, or made by students and used to illustrate work in this area. Again, the use of the overhead or opaque projector is valuable in presenting this illustrated work. Examples of snowflakes and other crystals may be obtained from motion or still pictures, or clipped from magazines showing the abstractual use in home furnishings. Student made designs and other similar materials may be displayed on the bulletin board and the walls of the room to help create a mathematics laboratory atmosphere.

A wide variety of instructional motion pictures and filmstrips on mathematical processes is available.

Field trips for simple surveying and for measuring through the use of similar triangles add interest to the course and demonstrate the practical nature of the study.

A variety of forms, such as income tax, insurance policy, money order, and blank checks may be secured free. They constitute practical instructional materials in general or business mathematics.

BUSINESS EDUCATION

Keyboard and technique charts are invaluable in the teaching of typewriting.

Bulletin board exhibits of samples of the best or of improvement in shorthand and typewriting are incentives to better class work.

Recordings are available to assist classes in learning to type to music. Many teachers who have used them are enthusiastic about their value in assisting pupils to develop rhythm and speed.

Motion picture demonstrations by champions may be used as motivating devices. Motion pictures may also show effectively the application of business training in modern industry.

Carefully timed tape recordings prepared by the teacher will assist the students in drills in transcription and shorthand.

Cartoons showing the results of good and bad business techniques are vivid instructional material.

PHYSICAL EDUCATION AND ATHLETICS

Still pictures may be used to demonstrate correct posture, the best way to hold a football for various purposes, and many other skills. A collection of these could be displayed at appropriate times during the school year.

Motion pictures, especially in slow motion, may be used in teaching a skill. They are most effective when they are shown during the first part of a period and the pupils have an opportunity to practice these skills during the remainder of the period.

Teaching films and filmstrips are available in the areas of physical fitness, competitive sports, and recreation.

ART

Art education is a direct experience. The fact that art is a creative experience makes the use of audio-visual instructional materials such as scales and models, motion pictures, and demonstrations indispensable in the teaching of art. Exhibits, museums add the use of still pictures also are involved. Filmstrips, motion pictures, non-projected pictures, and television all may be used effectively in art education. Field trips are extremely valuable, as simple as sitting outside the classroom or within the school grounds and sketching. However, trips to interesting places that are related to some other subject area, such as social studies, can be correlated by sketching the results of this experience. Art takes on a new dimension through the field trip.

Motion pictures provide direct and vicarious art experiences. They can provide helpful instruction in techniques.

The opaque projector can be used to demonstrate and also to highlight the lives of famous artists, their paintings and techniques.

The bulletin board is an important contribution to learning, and the art student should assist in the preparation of the bulletin board and apply the involved techniques.

Through television and recordings, artists might be invited to describe their techniques.

MUSIC

Audio-visual instructional materials may be used widely in instrumental and vocal music. There are many inexpensive materials available from the music publishing companies, such as fingering techniques, pictures of composers, pictures of instruments, historical and chronological arrangements of the composers' lives and compositions. There are many informative motion pictures for instrumental and general music classes.

In the field of recordings, especially in ensemble work, records are available in which one live performer can play with other recorded artists.

The use of the tape recorder provides wide opportunity to develop skills in both instrumental and vocal instruction. It can be used to record achievement of beginning and final presentation of student's learning endeavors. It can provide accompaniments for the classroom that is without the use of a piano. Slides can coordinate with the recorder for other aesthetic experiences.

There are many filmstrips and sound slide-films that show techniques of vocal (as well as instrumental) demonstrations and these may be coordinated with the music texts.

USE OF FREE AUDIO-VISUAL INSTRUCTIONAL MATERIALS

Suggestions for the use of commercially sponsored teaching materials should include a consideration of the following principles:

1. All of the materials should be previewed carefully by teachers to insure that they are satisfactory for use.

2. Except for entertainment, materials should not be shown in assemblies. Teaching materials should be used as part of the regular classroom instruction.

3. Acceptable sponsored audio-visual materials give general information, show processes and methods, develop general understandings and attitudes; they do not foster a specific economic attitude or excessively promote the sale of a particular brand.

4. The factual content of the materials must be accurate, truthful and representative.

5. The materials must contribute to the achievement of the specific aims of the teaching-learning situation in which it is used. It should fit in as an integral part of this process.

6. Sponsored material should present material not easily secured from non-sponsored sources.

7. The content, method of presentation, and vocabulary must be appropriate to the grade level where it is used.

8. The useful educational portions of the audio-visual materials should not be cluttered with irrelevant material that does not contribute to learning.

9. Materials with a pronounced bias may be used in classes (such as consumer economics and social studies) where there is an opportunity to analyze, compare, and evaluate.

STUDENT AUDIO-VISUAL ASSISTANTS

SCHOOLS SHOULD HAVE ORGANIZED STUDENT-ASSISTANT PROGRAMS TO PROVIDE LEARNING EXPERIENCE FOR THE STUDENTS AND SERVICES TO THE SCHOOL. These programs provide opportunity:

-for the development of a sense of responsibility

-for the development of a fair and cooperative attitude

-for the development of personal pride and achievement in service to school and community

-for the development of interest in worthwhile leisure time activities

-for intellectual and cultural growth

-for development of skills, interests, and abilities of vocational and avocational nature

The student audio-visual assistant is usually from upper elementary grades, junior high, or senior high, assigned to a class on a regular basis for the purpose of performing certain audio-visual activities. The assistant:

-operates projectors--16mm sound, opaque, overhead, slide, filmstrip

-operates tape recorders and record players

-repairs magnetic recording tape and motion picture film

-operates public address systems

-assists in preparation of materials for classroom and school use

-collects materials for dispatching to central materials center

-performs other services to fit local needs

ORGANIZING A STUDENT AUDIO-VISUAL ASSISTANT PROGRAM

A student audio-visual assistant program may operate under one of several plans.

Club organization plan: students are members of a club sponsored by the audio-visual coordinator, who is responsible for the training and supervising of the service club personnel. Leadership and organization are important to a successful service club. Every member may be given a service club card, after demonstrating proficiency necessary to qualify him for the card. The school may affiliate with state and national student audio-visual service organizations. Recognition may be given and recorded on the permanent record of the student who has given one or more semesters as a member of the service club. Lapel buttons or pins may be given these students.

Class-section representative plan: students are selected to handle audio-visual responsibilities pertinent to the class in which they are enrolled. These students are also under the direction of the audio-visual coordinator for training and supervision. There may or may not be a club organization. This plan insures that a qualified operator can be found in each section of each class.

SELECTION OF STUDENT AUDIO-VISUAL ASSISTANTS

In some schools announcements requesting volunteers are made from the office. A faculty committee is formed to screen the applicants. These students who are approved by the teacher committee are notified to meet as a group for a thorough explanation of the purposes of the club and their responsibilities as individuals.

In other schools a faculty committee meets and recommends students they consider qualified for membership in a club or as class-section representatives. These students are contacted and the services they are expected to render are explained. Those interested and willing to assist are trained.

Mechanical aptitude tests may be given before membership application in a club is considered or before a student can assume the duties of a school projectionist. Grades and personality may be considered. Students having little chance for success in athletic, social, or academic activities of the school may be considered in order to give them status and keep them in school.

WORK ASSIGNMENT

It is recommended that students be assigned audio-visual duties for classes of which they are members, during study hours or unscheduled periods. Students should not be excused from classes to operate equipment. When equipment must be carried from one floor level to another, students should work in pairs. Even in smaller schools there should be a minimum of two experienced assistants for each period of the school day, and if students work in teams, there should be a minimum of four assistants per period.

Teacher Suggestions for Revision

Chapter Eight

Evaluation of Audio-Visual Services

Periodic and systematic methods of evaluation should become an integral part of any administrative program . . . . . .

204-LISTENING ROOM

Evaluation of Audio-Visual Services

A PROFILE OF YOUR A. V. PROGRAM

PERIODIC AND SYSTEMATIC METHODS OF EVALUATION SHOULD BECOME AN INTEGRAL PART OF ANY ADMINISTRATIVE PROGRAM. If the audio-visual program is to develop, year by year, into a fuller and richer integrated part of educational experiences, then its present and past performances should be closely studied and evaluated. These evaluations should be measured at every level of the instructional program, with the benefits received by the learner being the final criterion for judgment.

The criteria suggested below have been designed to give all who have responsibilities for the instructional program in a school or school system an opportunity to make self-evaluation of the program. This should include teachers, informed students, supervisors, administrators, parents, and school board members. A profile of their composite judgments will point to areas of strength and weakness and can be used as a guide for future planning.

The criteria are listed in four sections: AV Materials, Building facilities and Equipment, Teacher Information and Competency, and AV staff.

The following is an explanation of the rating scale: 5 is **excellent** conditions or provisions are extensive and work excellently with little or no need for improvement; 4 is **good** -- conditions or provisions are extensive and work well, but slight improvement is desirable; 3 is **fair** -- conditions or provisions are moderately extensive but work poorly, or are limited in extent but work well; 2 is **poor** -- conditions or provisions are undesirably limited and work poorly; 1 indicates that conditions are **missing**.

AUDIO-VISUAL MATERIALS

	RATING				
	1	2	3	4	5
1. Do all teachers have access to a good, basic selection of the following types of audio-visual materials? a. Projected visual materials such as motion pictures, filmstrips, and slides. b. Non-projected materials such as flat picture sets, stereographs, felt board sets, maps, charts, etc. c. Three-dimensional materials, such as globe dioramas, models, specimens, exhibits. d. Broadcast materials, such as radio and TV programs planned and produced especially for school needs. e. Sound recordings, such as records and tape recordings.					
2. Are frequently used materials made available through a system-wide audio-visual center, or building collection?					
3. Do teachers participate in selection of new materials?					
4. Are items available when requested a great majority of the time? (An average of 9 times out of 10 is desirable).					

	1	2	3	4	5
5. Are materials available to teachers for as long as necessary to permit preview, use, and re-use?					
6. Is it possible for teachers to get materials on short notice (within three days) as well as book them in advance (three to four months)?					
7. Is it easy for teachers to order materials?					
8. Are materials regularly inspected and kept in good condition?					
9. Does the school system deliver and pick up all materials ordered from the materials center?					
10. Are teachers given help in locating and selecting materials that can be rented or borrowed outside of the school system?					
11. Does the school system encourage the use of community resources by providing a manual listing possible places and people to visit? Giving assistance in making arrangements for trips? Providing free transportation for pupils? Providing substitute teachers when necessary?					
12. Do teachers have work space, equipment, and staff assistance to enable them and their students to prepare AV materials?					
BUILDING FACILITIES AND EQUIPMENT					
1. Do teachers have access to a:					
a. 16mm motion picture projector?					
b. 35mm filmstrip projector?					
c. 2x2 slide projector?					
d. 3 1/4x4 slide projector?					
e. Overhead projector?					
f. Opaque projector?					
g. Micro projector?					
h. Television set?					
i. Projection stand?					
2. Are the following kinds of equipment available:					
a. Three-speed record player?					
b. Two-speed tape recorder? (4 3/4 and 7 1/2 inches per second)					
c. Radio -- AM and FM?					
3. Does every classroom have light control facilities for commonly used projected materials including opaque projection? (Requires reduction of light level to not more than 1/10 of a foot candle).					

	1	2	3	4	5
4. Does every classroom also have:					
a. Electrical outlets at front, rear, and each side?					
b. Adequate ventilation and temperature control?					
c. Good acoustics?					
d. Permanent projection screen?					
e. Adequate storage space for flat pictures, charts, maps, globes, exhibits, demonstration materials?					
f. Hot and cold running water?					
g. Sufficiently flexible chalk board and display board equipment to permit their easy adaptation to class needs.					
5. Is auditorium equipment suitable for presentation of all commonly used types of audio-visual materials?					
6. Is it school policy to provide audio-visual equipment of all types on long-term loan for frequent use?					
7. Are there school display areas in corridors, the AV center, and library?					
8. Does **each school** have an audio-visual center providing space for:					
a. Storing, handling, and maintaining equipment and materials?					
b. Preview, listening, and examination?					
c. Preparation of materials by students and teachers?					
d. Office activities of the coordinator and staff?					
9. Does the school system have an audio-visual instructional materials center with space and facilities for:					
a. Maintenance of an adequate library of audio-visual materials?					
b. Equipment storage and maintenance?					
c. Conferences, workshops, and preview sessions for groups of teachers?					
d. Local production including photographic, non-photographic, and recorded materials?					
e. Office activities of the director of the center and his staff?					
10. Is it **easy** for teachers to order and get equipment? (Requests should be filled at least nine times out of ten).					
11. Is school equipment kept in good operating condition?					

	1	2	3	4	5
12. Does each building have a two-way central sound system with classroom control?					
13. Are there TV and radio antenna outlets in every classroom and the auditorium?					
Teacher Information & Competency					
1. Is a comprehensive, up-to-date catalog of all audio-visual materials and services available in the school audio-visual center of library?					
2. Does each teacher have a **personal copy** of the parts of the catalog that pertain to his own teaching areas?					
3. Do course of study guides list AV materials correlated with units of work?					
4. Are teachers kept informed by regular announcements of new materials made available after publication of the catalog?					
5. Does each teacher make regular use of a variety of projected and non-projected audio-visual materials as an integral part of his classroom teaching?					
6. Can each teacher operate the equipment available to him?					
7. Has each teacher had at least one course in audio-visual methods and materials as a part of his professional preparation?					
8. Does the school or school system conduct a regular in-service audio-visual training program including demonstrations, workshops, and individual consultations?					
9. Is each teacher well informed about the operation of the audio-visual program in his own building?					
10. Is there a definite policy on the part of the school administration favoring the use of audio-visual materials by teachers?					
Audio-Visual Staff					
1. Is there a qualified audio-visual coordinator in every school? (At least 3 years of successful teaching experience and at least four semester hours of advanced study in audio-visual education).					

	1	2	3	4	5
2. Does the coordinator have released time for his work? (8 minutes per day per teacher is desirable).					
3. Is the coordinator given extra salary increment?					
4. Does the coordinator receive clerical assistance? (5 minutes per day per teacher is desirable).					
5. Does the school have a student assistant corps which provides for at least one trained member in every classroom as well as a group to assist the coordinator? (This would not apply in lower elementary grades).					
6. Does the full-time AV director for the system have the following minimum qualifications: a. A master's degree or its equivalent in audio-visual education? b. Not less than 3 years experience as a successful teacher? c. The leadership ability expected of supervisory personnel?					
7. Is the AV staff as a whole sufficiently qualified and numerous to serve all teachers adequately?					

A Selected Bibliography

A. GENERAL REFERENCES

This annotated list of general references should prove of real value to schools and teachers interested in developing better audio-visual programs and services. It includes basic items which schools and school districts should have available for their teachers; also some less expensive references that teachers might acquire for personal resource files.

ADMINISTRATION

Administering Audio-Visual Services, by Carlton W. H. Erickson, Macmillan Co., 60 Fifth Avenue, New York 11, New York. 1960 $6.95.

Delineates the functions and responsibilities of the audio-visual specialist in implementing instruction in the nation's classrooms. All aspects of a good and well-directed audio-visual program are covered: the relationship of audio-visual materials in bolstering the curriculum, principles of their proper utilization, decisions cerning facilities and selection of equipment, in-service training, staff organization, budgeting, public relations, and evaluation.

The Cooperative Approach to Audio-Visual Programs, Dept. of Audio-Visual Instruction, N.E.A., 1201 Sixteenth Street, N.W., Washington - D.C., 1959, 50 p., $1.50.

Traces the history of cooperative programs in audio-visual instruction. Gives suggestions for setting up such cooperatives and proposed objectives. Presents guidelines on finances, direction, scheduling and distribution of materials and accomplishments of existing co-operatives.
Provides information concerning the establishment, organizational structure, financing, procedures used in selecting and distributing materials, and personnel employed from 104 cooperative audio-visual centers surveyed throughout the U.S. serves as a beginning point for improving services of presently operating audio-visual centers and as a guide for other cooperative programs yet to be undertaken.

Evaluative Criteria for Audio-Visual Instructional Materials Services, Dept. of Audio-Visual Instruction, N.E.A., 1201 Sixteenth St., N.W., Washington 6, D.C., 1957, free.

Provides a self-evaluation instrument.

Graphic Communication and the Crisis in Education, by Neil E. Miller, et al., Audio-Visual Communication Review, Vol. 5, No. 3., Department of Audio-Visual Instruction, N.E.A., 1201 Sixteenth Street, N.W., Washington 6, D.C., 120 pages, $1.25.

A review of the thinking of a group of well-known educators and business men concerning the possible place of graphic communication in education. Section I looks at the barriers which now exist in attempting to use graphics for optimum use in teaching. Brief descriptions of areas such as cultural lag; our building program for schools; difficulties in procuring existing material; acute curriculum problems; the teacher; and securing support from a wider audience are listed as barriers to better use of graphics. Section II discusses the factors of teaching-learning in relation to content and making of films.

Improving Instruction: Budgeting Your Audio-Visual Program, by K. C. Rugg, Indiana University, Audio-Visual Center, Bloomington, Indiana, 1960, free.

An analysis of the budgets of twenty-eight audio-visual programs in school systems of various sizes in all parts of the country. It does not attempt to provide formulas, to dictate what should be spent, or to determine what a program should include; it merely sets forth what others are doing. Very useful in planning and supervising audio-visual programs.

Planning School Buildings for Instructional Materials from the Viewpoint of the Audio-Visual Supervisor, by L. C. Larson, Indiana University, Audio-Visual Center, Bloomington, Indiana, 1955, 14 pages.

Stresses the importance of a coordinated instructional materials program within the school, as well as the physical facilities needed for a successful program utilizing varied instructional tools.

School Administrator and His Audio-Visual Program, 1954 Yearbook, Dept. of Audio-Visual Instruction, N.E.A., 1201 Sixteenth St., N.W., Washington 6, D.C. 367 p., $3.75.

Provides information specifically for school administrators on the characteristics and requirements of an effective audio-visual program.

AUDIO-VISUAL EQUIPMENT

ABC's of Audio-Visual Equipment and The School Projectionist's Manual (second edition) by Philip Mannino, M.O. Publishers, Box 406, State College, Pa., 1958, 80 pages, $1.25.

Packed with data, the booklet gives the school coordinator a useful tool in many facets of the audio-visual program. There are charts for "trouble shooting" the motion picture projector, a director's check-list for club-card proficiency tests, suggested films and filmstrips for use in teaching audio-visual techniques, sources of equipment, glossary of terms, addresses of manufacturers and sample examination questions.

Audio-Visual Equipment Directory, National Audio-Visual Association, Inc., Fairfax, Virginia, $4.75.

All those persons responsible for purchasing audio-visual equipment for individual schools or system-wide should consult the NAVA Equipment Directory. This compilation by leading manufacturers and others contains all pertinent facts about most of the 500 current models of audio-visual equipment on the market. It's an indispensable guide in budget planning.

Audio-Visual Equipment Manual, James D. Finn, Henry Holt and Company, 383 Madison Avenue, New York 17, N.Y., 1959, 363 pp. $15.00.

Self-teaching manual written for use of student projectionists and as a basic reference for those utilizing audio-visual equipment. Projection, playback, and tachistoscopic equipment, as well as tape recorders, are featured. Each section contains a description of the how and why of operation of the piece of equipment, instructions for such operation, and techniques for good utilization. Photographs, and simple drawings are used extensively in the text to illustrate the step-by-step directions for the operation and maintenance of practically every piece of audio-visual equipment that a school is likely to have.

Guide for Teaching Audio-Visual Operators Classes, , by Mildred C. Hagan, Sidale Publishing Company, Los Angeles, California, 1957, 100 pages, $2.00.

Discusses training student audio-visual operators' clubs, developing skills and using forms and checklists.

How to Use a Tape Recorder, by Dick Hodgson and H. Jay Bullen, Hastings House, 41 E. 50th St., New York 22, N.Y. 1957, 216 pages, $4.95.

Checklists for choosing a tape recorder are given along with methods of operation and procedures for employing accessories. A useful feature of the book is an extensive glossary of tape recording terms and a thorough explanation of recording techniques.

Manual of Practical Projection, by Robert A. Metchell, International Projectionist Publishing Company, 19 W. 44th Street, New York 36, New York, 1957. 450 pages, $6.00.

A handbook covering every aspect of motion picture projection in nontechnical language.

Tape Recorder in the Elementary School, Minnesota Mining and Manufacturing Company, Education Service Department of Magnetic Products Division, St. Paul Minn., 1955, 58 pages, 25 cents.

A well illlustrated handbook of uses of the tape recording in elementary grades.

Tape Recorders and Tape Recording, by Harold Weiler, Radio Magazines, Inc., Box 629, Mineola, N.Y., 1956, 192 pages, $2.95 or $3.95 (hard cover).

Written for the amateur and semi-professional tape recordist. Gives special emphasis to the use of tape recording in education.

Using the Opaque Projector, by Raymond Denno, Squibb-Taylor, Inc., 1213 S. Akard Street, Dallas 2, Texas 1958, 25 pages, $1.25.

Offers concrete suggestions and well-illustrated opaque projection techniques.

AUDIO-VISUAL MATERIALS AND METHODS

Audio-Visual Bibliography, The, by Dean McClusky, William C. Brown Co., 135 South Locust Street, Dubuque, Iowa, 1955, $4.00.

Complete bibliography of writings in audio-visual education to 1955. Right sections (1) The Philosophy and Psychology of Teaching with Audio-Visual Materials; (2) Audio-Visual Teaching Materials and Their Uses; (3) Elementary Schools; (4) Secondary Schools; (5) Higher Education; (6) Administration of Audio-Visual Instructions; (7) Research on Value and Utilization of Audio-Visual Materials; (8) Miscellaneous.

Audio-Visual Instruction: Materials and Methods, by James W. Brown, Richard B. Lewis, and Fred F. Harcleroad, McGraw-Hill Book Company, 330 W. 42nd Street, New York 36, New York, 1959, 554 pages, $7.95.

Written by three well-known educators, the book is divided into four parts, each of which is well illustrated by case studies and by pictorial representation. Each chapter closes with three sections of interest to all readers. These include an activities and questions section, recommended readings, and an up-to-date area of suggested audio-visual materials. Throughout the book there is an emphasis that optimum learning takes place when all types of materials are used, each for its separate contribution. Provides concrete. practical information on the use of instructional materials. **An Instructional Materials Manual** is available to accompany the text. Approximately 60 exercises relating to creating, selecting, using and evaluating materials or operation of equipment are developed. Price is $3.50. Teachers guide is free.

Audio-Visual Materials and Devices, by Ben F. Holland, H. C. Hartsell, and R. L. Davidson, Rodgers Litho Printers, 332 N. Ave. P., Lubbock, Texas, 1960, 157 pages $3.00.

Presents clearly in pictorial, graphic and verbal form the basic principles of:

(1) Care and Handling of Audio-Visual Materials,
(2) Sound Recording on Disc, Tape and Film,
(3) Sound Reproduction from Disc, Tape and Film,
(4) Transparent Horizontal and Vertical Projection,

(5) Opaque, or Projection by Reflection,
(6) Mechanics and Operation of Projectors,
(7) Selection and Utilization of Audio-Visual Machines
(8) Production of Teacher-Pupil Made Materials.

Audio-Visual Materials and Techniques (second edition) by James Kinder, American Book Company, New York, New York, 1958, 592 pages, $7.00.

A well illustrated current basic text in audio-visual instruction.

Audio-Visual Materials of Instruction, Forty-Eight yearbook, Part I, National Society for the Study of Education, University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois, 1949, $3.50.

Written by leaders in the audio-visual field, its contents cover history of audio-visual education; school use of these materials; the obstacles to using them; and function of the teacher in their use; and the pre- and in-service programs for teacher training. Excellent sections are also found for the administrator interested in the differences between the city, rural and state program.

Audio-Visual Materials: Their Nature and Use (Second Edition). 1957, by W. A. Wittich and Charles Schuller, Harper and Brothers, 49 E. 33rd St., New York 16, N.Y., 570 pages, $6.50.

A guide to effective teaching with audio-visual materials. Describes the materials of audio-visual instruction and suggests methods and plans for the most effective use of these materials in daily classroom work. Analyzes the important considerations of mechanics, function, design, and application of the many types of audio-visual media. **The Activities Manual** which accompanies the text costs $1.75.

Audio-Visual Methods in Teaching (second edition), by Edgar Dale, Dryden Press, 110 W. 57th St., New York 19, N.Y., 1954, 534 pages, $7.25.

Part I is devoted to the theory of audio-visual instruction. Dale explores the relationship between good teaching and communication.

Part II describes the various types of experiences, i.e.: direct, contrived, dramatic, that a student may have and shows how a student may gain these experiences through field trips, motion pictures, demonstrations, exhibits, still pictures, radio, and educational television.

Part III indicates ways audio-visual instructional materials may be used in social sciences, English, reading, industrial and vocational arts, the humanities, health, safety and physical education.

Audio-Visual Procedures in Teaching, by Lester B. Sands, Ronald Press Co., 15 E. 26th Street, New York 10, N. Y., 1956, 670 pp., $6.00.

Deals with all of the major kinds of audio-visual procedures and equipment. Gives information on sources for free and inexpensive materials, a bibliography of selected references, sources of equipment, threading diagrams, and a list of audio-visual associations and periodicals. Includes laboratory exercises and keyed examination questions. Separate chapter covers each type of basic audio-visual aid, analyzing its uses, possibilities and limitations.

Audio-Visual Reader, by James S. Kinder and F. Dean McClusky, William C. Brown Company, 135 S. Locust Street, Dubuque, Iowa, 1954, 392 p., $5.75.

Contains a collection of nearly two hundred articles written by over one hundred and forty authors, committees and commissions, on audio-visual materials or problems.

Audio-Visual School Library Service, by Margaret I. Rufsvold, American Library Association, 50 E. Huron Street, Chicago 11, Illinois, 1949, $2.75.

Evisions the school library as a center for the selection, utilization, and distribution of a wide variety of the materials of communication. Details a program of student and teacher services which might be available from a school library extending its service to include all types of instructional materials.

Audio-Visual Teaching Technique, by F. Dean McClusky, William C. Brown Co., 135 S. Locust St., Dubuque, Iowa 1949, $1.75.

Explains the place of audio-visual materials in the school and gives principles for use derived from experience and research. Help is given the school administrator in suggestions for administration, production, and correlation of materials.

Audio-Visual Techniques for the Enrichment of the Curriculum, by Anna Curtis Chandler and Irene F. Cypher, Nobel and Nobel, Inc., 67 Irving Place, New York 3, N. Y., 1948, $3.50.

Despite the fact it was published more than 10 years ago, this book contains many informative and stimulating discussions and explanations of the use of instructional materials in actual classroom situations. The overall teaching objectives which are desired and the eventual results which can be obtained through the use of educational television, radio dioramas, and graphic displays are presented by experts who understand the needs of children and the problems of teachers.

Display for Learning: Making and Using Visual Materials, prepared by Marjorie East, Edited by Edgar Dale, Dryden Press, 110 W. 57th Street New York 19, New York, 1952, 306 pages, $3.90.

The teacher who uses this book to help in the production and use of visual materials in the classroom will find that it is not necessary to have a large budget -- that materials can be created and displayed easily through the application of common sense and a sincere interest in helping children to learn. The value of visual display is well presented and details are given concerning the use of materials, design for display, and the many mediums available.

Felt-Boards for Teaching, by Charles H. Dent and E. F. Tiemann, Visual Instruction Bureau, University of Texas, Austin 12, Texas, 1955, 26 pages, $1.00.

A booklet on felt boards, giving attention to the construction, materials for use, tips on presentation and sources of materials.

The Film and Education, by Godfrey Elliott, Editor, Philosophical Library, Inc., 15 E. 40th Street, New York 16, N. Y., $7.50.

Acquaints the reader with the nature of educational films, their use within and without the classroom as well as in foreign lands. Studies administrative phases of audio-visual programs on local, state, and college levels. Stresses application of motion pictures as a method of mass communication rather than production of utilization techniques.

Flannel Board, by Merton B. Osborn, Redlands, Calif., 1956, 36 p., $1.00.

Gives specific directions for making flannel boards, preparation of materials and suggestions for use. Also includes a source list and bibliography.

Foreign Language Laboratories in Schools and Colleges, by Marjorie C. Johnston and Catherine C. Seerley, U. S. Dept. of Health, Education & Welfare, Office of Education, Bulletin 1959, No. 3, Superintendent of Documents, Government Printing Office, Washington 25, D. C., 86 p., 35 cents.

Information, detailed, practical and helpful, about the language laboratory is packed in this U.S. Office of Education bulletin. The handbook has both administrative and pedagogical facts which represent current thinking and action in the field. Precise estimates of cost and maintenance are included as well as specifications for equipping and housing these language centers. Gudiance on the basis of experience in the use of laboratories throughout the country is given in (1) orientation of students, (2) the aural-oral approach, (3) audio instructional materials, (4) laboratory methods, and (5) visual materials.

Gateway to Learning, by Audio-Visual Commission on Public Information, Room 2230, 250 W. 57th St., New York 19, New York, 1957 14 p., free.

A graphic presentation in the interest of better instruction through modern tools for learning.

How Good Are Our Teaching Materials? National Citizens Commission for the Public Schools, 2 W. 45th St., New York 36, N. Y., 1955, 95 p., free.

A guide to understanding the use and improvement of instructional materials. Good evaluation check-lists.

How to Reach Our Teaching Goals with Teaching Aids, by Norman Woelfel, Teaching Aids Laboratory, Ohio State University, Bureau of Educational Research, Columbus, Ohio, 1955, 12 p., 35 cents.

A brief consideration of the need for teaching aids combined with step-by-step planning of a teaching aids program.

Instructional Aids, by Leslie W. Nelson, William C. Brown, Co., 135 S. Locust St., Dubuque, Iowa, 1958, $3.50.

Contains hundreds of ideas for instructional materials which can be made easily by the teacher and student.

Instructional Materials: An Introduction for Teachers, by Louis Shores, Ronald Press Co., 15 E. 26th St., New York 10, N. Y., 1960, 408 p., $6.50.

Orients the teacher and prospective teacher in the use and administration of teaching materials. Organized into three major areas: print, graphics, sight and sound. Fourth section describes briefly the equipment and housing requirements of three types of centers: the classroom center, the school materials center, and the system-wide center.

Instructional Materials for Elementary Schools, 35th yearbook of the Department of Elementary School Principals, N.E.A., Washington D. C. (1201 Sixteenth St., N.W.) 1956, 310 p., $3.50.

Designed to stimulate ideas about use of materials. Reflects current status and use of a great variety of materials in reports of first hand experiences in elementary schools.

Integrated Teaching Materials, , by R. Murray Thomas and Sherwin G. Swartout, Longmans, Green & Co., Inc., 119 W. 40th St., New York 18, N. Y., 1960, 545 p.

Designed to help both new and experienced teachers improve their skills of choosing, creating, and using teaching materials. Chapters cover methods and materials, reading of

text materials, photographed materials, drawn and printed graphic materials, broadcast and recorded materials, constructed materials, real-life materials, displaying and administering materials. Appendix includes sources of textbooks, sources of films and recordings, and threading diagrams for motion picture projectors.

Learning from Films, by Mark A. May and Arthur A. Lumsdaine, in collaboration with R. S. Hadsell, A. I. Gladstone, and J. J. Howell, Yale University Press, New Haven, Connecticut, 1958, 357 p., $5.00.

Four major areas of experimentation and analysis are described: (1) the acquisition of knowledge from films; (2) the effects of films on subsequent learning activities; (3) techniques of evaluating instructional films; (4) the use and potential of teaching films. Directs attention to discovering principles of good utilization.

Manual of Audio Visual Techniques, by Robert de Kieffer and Lee W. Cochran, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1955, 220 pp., $3.95.

Designed as a workbook, it takes the teacher through the gamut of audio-visual instruction -- from communications in learning, through materials, methods, and equipment, and finally to organization, administration and evaluation of a successful program. Well-illustrated and supplied with charts, graphs, references, and thought-provoking suggestions. Correlated with six basic reference texts on utilization of audio-visual materials.

Mass Media and Education, 53rd Yearbook of the National Society for the Study of Education, University of Chicago Press, Chicago, Ill., 1954, 290 p., $4.00.

An authoritative work on mass communications dealing with problems pertaining to the enrichment of classroom instruction through the wider use of audio-visual materials. Gives excellent and interesting background information on the ownership, control, regulation, and purposes of mass media. Offers suggestions to educators and parents on how to use the media effectively, with emphasis on how to develop discriminating taste.

Models for Teaching, by Martha F. Meeks, University of Texas, Visual Instruction Bureau, Austin 1, Texas, 1956. 40 p., $1.00.

Acquaints teacher with the different kinds of teaching models and their applications in various subject matter areas.

Planning Schools for Use of Audio-Visual Materials, No. 1: Classrooms, Dept. of Audio-Visual Instruction, N.E.A., 1201 Sixteenth St., N. W., Washington 6, D.C., 1958, $1.50.

Gives detailed information on screen types, light control, devices for classrooms, display facilities, and the like.

Sound Teaching: Have Language Laboratory, What Now? by Gustave Mathieu, Educational Division, Magnetic Recording Industries, 126 Fifth Avenue, New York 11, N.Y., 1959, 16 p., $1.00.

Mathieu divides laboratory programs into three categories: (1) integrated, (2) independent, and (3) mixed. Four basic types of exercise for laboratory practice are described: (1) audio-passive which seeks to develop the learner's ability to understand the spoken language by ear along; (2) audio-active which develops the learner's ability to express himself in everyday conversation and the perfection of his pronunciation; (3)

Teaching Tools, by Harold R. Bottrell, Boxwood Press, Box 7171, Pittsburgh, 13, Pa., 1957, 139 p., $3.75.

A unique contribution to encourage the intelligent use of community resources in teaching.

Teaching with a Filmstrip, by Margaret Divizia, Society for Visual Education, 1345 Diversey Parkway, Chicago, Ill., 17 p., free.

Describes and illustrates the step of a good filmstrip lesson, including purposes, selection of materials, lesson plan, presentation, follow-up activities, and testing procedures.

What Research Says to the Teacher, by Paul R. Wendt, Dept. of Classroom Teachers, N.E.A., 1201 Sixteenth St., N. W., Washington 6, D. C., 1957, 32 p., 25 cents.

A brief report on the nature of audio-visual instruction and function of audio-visual materials based on research. Concludes that research amply justifies the use of audio-visual instruction to a very much greater extent at all school levels.

PRODUCTION

Amateur Filmstrip Production, Ohio State University, Teaching Aids Laboratory, Columbus, Ohio, 1958, 24 p., $1.00.

Step by step procedures for producing color filmstrips with a 35mm camera.

How to Make Good Tape Recordings, by C. J. LeBel, Audio Devices, Inc., 444 Madison Ave., New York 22, N. Y., 1956, 151 p., $2.50.

An intensive and extensive treatment of the process of tape recording in non-technical language.

How to Make Handmade Lantern Slides, by G. E. Hamilton, Keystone View Co., Meadville, Pa., 1952, 25 p., free.

Gives complete directions for making lantern slides, and offers suggestions for slide utilization in a variety of subject areas. Includes tachistoscopic slides.

Instructional Materials Manual by James W. Brown (and others), Spartan Book Store, San Jose State College, San Jose, Calif., 1957, 191 p., $2.95.

Well organized practical handbook to aid in choosing, using and creating materials and equipment. Constructed like a notebook so that pages or sections can easily be removed, taken out, or replaced. Exercises, keyed to references throughout the manual are really very detailed lesson plans.

Lettering Techniques, by Martha F. Meeks, Visual Instruction Bureau, University of Texas, Austin 12, Texas, 1956, 33 p., $1.00.

Those who have not had formal instruction in the art of lettering will find this booklet especially designed for their use. Considers the uses of lettering, and its functions served through character, legibility, and applied uses. Treats preparation: basic formation of letters; spacing, hand lettering, ready-cut letters, and mechanical lettering.

Preparation and Use of Audio-Visual Aids (third edition) by Kenneth B. Hass and Harry Q. Packer, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1955, 318 p., $6.65.

Many helpful tips on what to do when preparing audio-visual materials. The details of the taking of motion pictures, the preparation of models and specimens, the laying out of bulletin boards and graphic materials, the making of flannel boards, and the making of many other useful teaching devices are spelled out in step-by-step fashion.

Production of 2x2 inch slides for School Use, by Joe Colthorpe, Visual Instruction Bureau, University of Texas, Austin 12, Texas, 1958, 79 p., $2.00.

Complete discussion on the making and utilization of these materials. A practical manual for better production and use of a medium well within reach of any teacher.

Puppetry in the Curriculum, Board of Education, City of New York, Curriculum Bulletin (reprint 1954) 75 cents.

A good manual on puppets, marionette, shadow figures and masks for use by teachers in elementary and junior high schools.

Tear Sheets for Teaching, by Charles H. Dent, Leonard B. Ambos, and Nancy M. Holland, Visual Instruction Bureau, Division of Extension, University of Texas, Austin 12, Texas, 1954, 24 p., $1.00.

First in a series of "how to do it" booklets for teachers designed to give them the help they need in preparing their own teaching materials. Shows teachers the value of "tear sheets" -- resource materials, mainly pictures, clipped from magazines, newspapers, calendars, catalogs, etc.

They See What You Mean: Visual Communication with the Overhead Projector, Prepared by James E. LeMay and Eric F. Burtis, with illustrations by Owen Finstad, Ozalid Audio-Visual Department, Division of General Aniline and Film Corporation, Johnson City, N.Y., 1959, 88 p., $3.75.

Complete manual for all teachers who plan to make the best use of the overhead projector. Begins with the "whys" of overhead projection and progresses to the basic principles of making transparencies by hand -- the sketch transparency, the cut-out visual, mechanically produced transparencies, and photographic transparencies.

SOURCES OF AUDIO-VISUAL INSTRUCTIONAL MATERIALS

Educational Film Guide, H. W. Wilson Co., 750 University Avenue, New York 52, N.Y., $15.00.

A cumulative catalog of 16 mm films, sound and silent, educational and entertainment, which are available within the United States. Contains a directory of the main sources from which films may be obtained. Bound volumes to 1953, 1954-1958, 1959 and 1960 supplements.

Educators Guide to Free Films, compiled and edited by Mary Horkheimer and John Diffor, Educators Progress Service, Randolph, Wis., Annual editions, $6.00.

A cumulative catalog, revised annually, of motion pictures which are loaned free (except for transportation costs) in the United States. Films are grouped under appropriate school subjects, indexed alphabetically by title, and cross-indexed according to the subject matter treated. Gives brief descriptions of the films, indicates the source of each film, and provides a list of these sources with explanations of the terms under which the films may be borrowed.

Educators Guide to Free Slide Films, Educators Progress Service, Randolph, Wis., annual editions, $5.00.

A cumulative catalog, revised annually, of filmstrips and sets of slides that are loaned free (except for transportation costs) in the United States. Both sound and silent filmstrips are included. The filmstrips are grouped under appropriate school subjects, indexed alphabetically by title, and cross-indexed according to the subject matter treated. Gives brief descriptions of the filmstrips and slides, indicates the source of each one, and

provides a list of these sources with explanations of the terms under which the filmstrips may be borrowed.

Filmstrip Guide, H. W. Wilson Co., 950 University Ave., New York 52, N.Y., $8.50.

Cumulative catalog of filmstrips, sound and silent, which are currently available in the United States. Contains a directory of the main sources of filmstrips. Bound volume and three supplements through 1957. Annual supplements.

Free and Inexpensive Learning Materials, Division of Surveys and Field Services, George Peabody College for Teachers, Nashville 5, Tenn., 1959, 264 p., $1.50.

A comprehensive classification of more than 4,000 different free curriculum materials under 300 subjects, carefully evaluated.

National Tape Recording Catalog (second edition), Dept. of Audio-Visual Instruction, NEA and Kent State University, Kent, Ohio, 1957, 76 p., $1.00; 1958 supplement 28 p., 50 cents.

Alphabetically arranged programs are indexed by subject area with details on how to order materials. Tape libraries in back may be contacted for catalogs.

TELEVISION

The ABC's of TV, by Kathryn Dye Kendig and Gaither Lee Martin, Spartan Book Store, San Jose State College, San Jose 14, Calif., 1957, 238 p., $3.85.

A handbook on instructional public service programming for educators and community leaders. Covers technical aspects, utilization and evaluation, and use of audio-visual materials.

Educational Television, Report No. 56, Senate Committee in Interstate and Foreign Commerce, U. S. Government Printing Office, Washington, D. C., 1959, 103 p., free.

A thorough nation-wide survey of educational television.

Educational Television Guidebook, by Philip Lewis, McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y., 1961.

Presents in a single compilation data and information covering the field of educational and instructional television, particularly from the systems, equipment, and educational applications point of view. For pre-service preparation of new teachers; in-service orientation of administrators, supervisors and teachers; and curriculum specialists.

Handbook of Broadcasting (fourth edition) Waldo Abbot and Richard L. Rider, McGraw-Hill Book Co., 300 W. 42nd St., New York 36, N. Y., 1957, 531 pp., $8.75.

One of the most widely used texts on the fundamentals of radio and television. Combines historical development with descriptions of the ways in which radio, television, and other communication forms are handled from the planning stage through the writing and production. All types of programs, job opportunities, and business and legal aspects of radio and television are covered.

Impact of Educational Television, edited by Wilbur Schramm, University of Illinois, Urbana, Ill., 288 p.

A report on television as a tool in classroom teaching, as a factor in the after school hours

life of the child, and as a force in the adult community. Publication sponsored by the National Educational Television and Radio Center.

Television and Our Schools, by Donald G. Tarbet, Ronald Press Co., 15 E. 26th St., New York 10, N. Y., 1961, 306 p., $6.00.

Provides information essential to the proper utilization of television for in-school viewing. Discusses the development of educational television and its growing role in the educational process; describes the techniques necessary for direct teaching by television. Practical guidance is included on programming, facilities and equipment, and administrative problems. Special attention is given to the ways in which television can be used to enrich the curriculum, and to the future of educational television.

Television in Education, by Franklin Dunham, Gertrude G. Broderick, and R. R. Lowermilk, U. S. Office of Education, Supt. of Public Documents, U. S. Government Printing Office, Washington 25, D. C., 1956, 60 p., 55 cents.

A booklet giving an overall picture of educational television in its present stage of development and potentials for the future at all levels of education from preschool to adult leisure-time study. The distinctive place of the educational station in a community is covered in some detail, along with programming possibilities over both educational and commercial outlets. Direct teaching over closed circuit is also thoroughly treated.

Television in Our Schools, The Joint Committee on Educational Television, 1785 Massachusetts Avenue, N. W., Washington 6, D. C., 1955, 62 p., 50 cents.

Report of a seminar (fifty administrators, educational television practitioners, and representatives of interested national organizations) dealing with the philosophy, administration and financing of in-school telecasting. The following are some of the questions considered: How are school programs administered? Can in-school programs be made educationally effective? Can in-school programming be used to help in the solution of those problems caused by rapidly increasing enrollments? Can it help to improve classroom teaching?

The Television Program (Second Edition), by Edward Stasheff and Rudy Bretz, Hill and Wang, New York, 1956, 356 p., $4.95.

The sub-title "Its Writing, Direction, and Production," is a clue to the contents. Widely used as a college text, it is also accepted by theatre directors, artists, actors, and advertising and business executives. Photographs, diagrams, and sample scripts illustrate each section.

PERIODICALS

Audio-Visual Communication Review, Dept. of Audio-Visual Instruction (DAVI), NEA, 1201 Sixteenth St., N. W., Washington 6, D. C.

Published six times a year (four quarterly issued plus two special supplements). Reports significant research findings and abstracts on current developments in communication and audio-visual instruction.

Audio-Visual Instruction, Dept. of Audio-Visual Instruction (DAVI) NEA, 1201 Sixteenth St., N. W., Washington 6, D. C.

A monthly professional magazine. Contains articles on new audio-visual equipment, new instructional materials, new techniques, and new trends. Articles written by leaders in the field.

Educational Screen and Audio-Visual Guide, 2000 Lincoln Park, West Bldg., Chicago 14, Ill.

A monthly publication containing articles of interest to teachers, administrators, and audio-visual personnel. Articles are written by leaders in the field and classroom teachers on the selection and utilization of audio-visual equipment and materials.

Film and AV World, Ver Halen Publishing Co., 6327 Santa Monica Blvd., Hollywood 38, Calif.

A monthly publication of audio-visual news in school, industry, and religion. Reviews recent non-theatrical productions in these three areas.

NAEB Newsletter, National Assn. of Educational Broadcasters, 1346 Connecticut Ave., N. W., Washington, D. C.

A monthly publication of value to those engaged in radio and television broadcasting. Contains reports of workshops and seminars, monitoring studies, regional meetings, research, surveys and projects. The NAEB Journal (published bi-monthly) contains professional directories, speech and article reprints, program reports, and brief papers.

The Newsletter, Bureau of Educational Research and Service, Ohio State University, Columbus, Ohio.

Published monthly except June, July, August and September. Brings information to the teacher about the film, the press, and broadcasting. Features editorials.

Operating AV Equipment, by Sydney C. Eboch, Chandler Publishing Co., San Jose State College, San Jose 14, Calif.

SOURCES OF GENERAL INFORMATION

American Broadcasting Company, 7 West 66th Street, New York 23, New York.

American Council on Education, Educational Television Committee, 1785 Massachusetts Avenue N. W., Washington 6, D. C.

Columbia Broadcasting System, 485 Madison Avenue, New York 22, N. Y.

Division of Audio-Visual Instruction (DAVI) National Education Association, 1201 Sixteenth St., N. W., Washington 6, D. C.

Ford Foundation: Office of Reports, 477 Madison Avenue, New York 22, N. Y.

Fund for the Advancement of Education, 655 Madison Ave., New York 21, N. Y.

Learning Resources Institute, 680 Fifth Avenue, New York 19, N. Y.

Midwest Council on Airborne TV Instruction, Memorial Center, Purdue University, Lafayette, Indiana.

National Association of Educational Broadcasters, 1771 N. Street, N. W., Washington 6, D. C.

National Broadcasting Company, RCA Building, 30 Rockefeller Plaza, New York 10, N. Y.

National Congress of Parents and Teachers, 600 S. Michigan Blvd., Chicago, Ill.

National Defense Education Act, Title VII, Educational Media Branch, U. S. Office of Education, Washington 25, D. C.

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National Education Association, 1201 Sixteenth St. N. W., Washington 6, D. C.

National Education Television and Radio Center, 10 Columbus Circle, New York 19, N. Y.

NET Film Service, University of Indiana, Bloomington, Indiana.